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Cooperative Economic Insect Report

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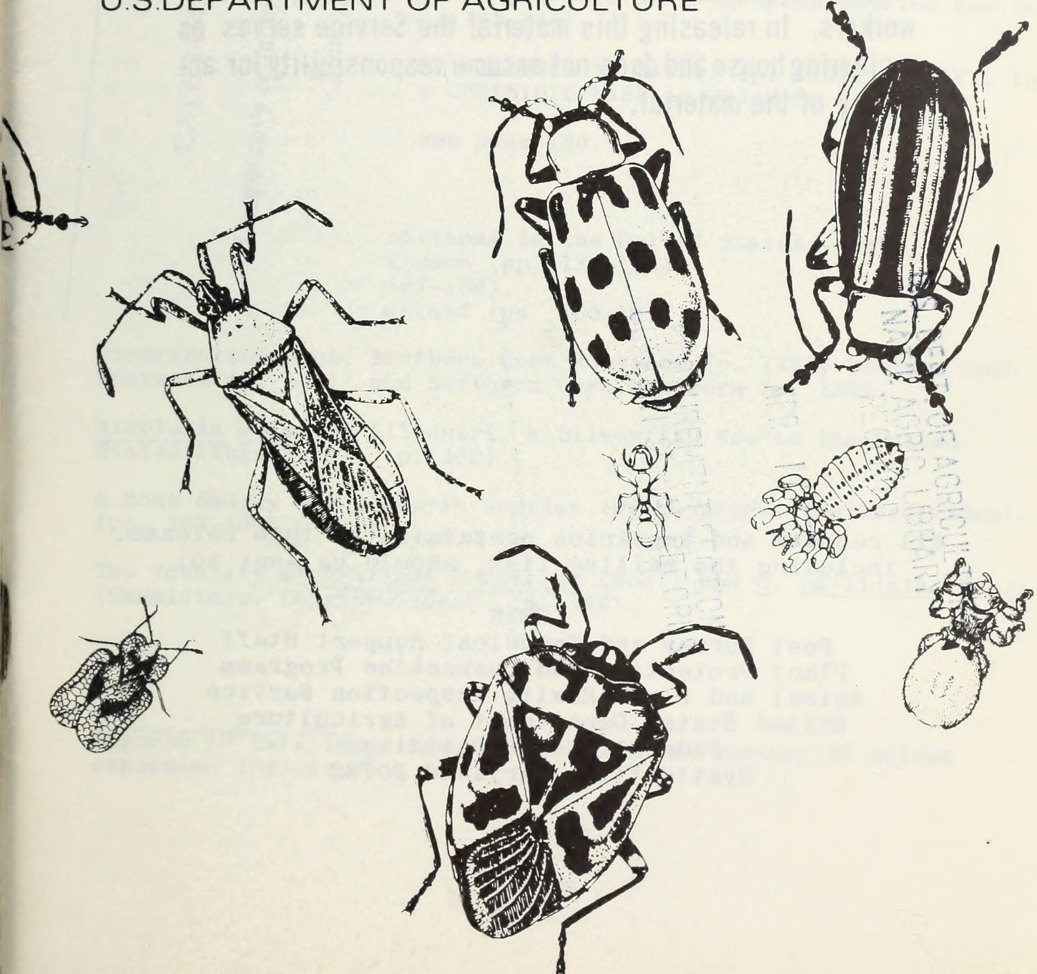

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ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE PROGRAMS
PEST SURVEY AND TECHNICAL SUPPORT STAFF

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Service serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 25 March 7, 1975 Number 10

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG still heavy in some small grains in Texas. (p. 131).

ALFALFA WEEVIL increased in south-central and Uvalde areas of Texas; larvae increased in southeast Kansas. (p. 132).

Predictions

SOUTHERN PINE BEETLE expected to cause greater timber losses in North Carolina in 1975 than in previous years. (p. 134).

FACE FLY expected to be heavy on livestock in northern Alabama this year. (p. 134).

Detection

- ● A SILVERFISH in Ohio is a new United States record. (p. 162).
- ● A SAWFLY reported from New York is a European species new to North America. (pp. 163-165).

New State Records: GULF WIREWORM in Hawaii (p. 135), a WEEVIL in Arizona (p. 136), and a CHRYSIDID WASP in Oklahoma (p. 136).

For new county record see page 136.

Special Reports

Summary of Insect Conditions in the United States - 1974.
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  Small Grains (pp. 157-159).
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Distribution Maps: Southern Corn Rootworm (p. 148), Western Corn Rootworm (p. 150), and Northern Corn Rootworm (p. 152).

Nicoletia meinerti Silvestri, a Silverfish New to the United States (Thysanura). (p. 162).

A Rose Sawfly New to North America (Hymenoptera: Tenthredinidae). (pp. 163-165).

The Identity of *Gratiana lutescens* (Boh.) and *G. pallidula* (Boh.) (Cassidinae: Chrysomelidae). (p. 166).

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NATIONAL WEATHER SERVICE 30-DAY OUTLOOK

MARCH 1975

The National Weather Service's 30-day outlook for March is for temperatures to average above seasonal normals over the Atlantic Coast States, the Ohio Valley, and the Great Lakes, as well as the California Valley. Below normal averages are indicated for the Pacific Northwest and the southern Great Plains. In unspecified areas, near normal temperatures are in prospect. Precipitation is expected to exceed the median amount over the eastern half of the Nation and in parts of the Northwest. Elsewhere less than the median amount is indicated.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the National Weather Service. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price $5.00 a year.

For weather of the week see page 167.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (*Schizaphis graminum*) - TEXAS - Ranged light to moderate, from very few to 80 per row foot, in small grains in Archer, Childress, Cottle, Fisher, Jones, Throckmorton, and Young Counties of Rolling Plains area. Ranged moderate to heavy in some fields in Baylor, Hardeman, Haskell, Knox, and Wichita Counties; ranged up to 250 per row foot in these fields. Ranged 250-350 per row foot in few fields in Baylor, Hardeman, and Knox Counties. Activity of beneficial species in small grains continued to increase in Rolling Plains area. Parasitic wasps parasitized 5-22 *S. graminum* per row foot in some fields in Archer, Baylor, and Hardeman Counties. Lady beetles preyed on *S. graminum* in some Archer, Baylor, Haskell, and Knox County fields. Spiders, nabids, and green lacewings also observed in several fields scattered throughout Rolling Plains. (Boring). OKLAHOMA - Counts in wheat per linear foot by county ranged as follows: Tillman 10-40 in most fields, occasionally up to 120; Jackson 10-85; Washita 15-20; Logan, Kingfisher, and Garfield 0-2. (Okla. Coop. Sur.).

ARMY CUTWORM (*Euxoa auxiliaris*) - OKLAHOMA - Ranged light to moderate in one wheatfield in Jackson County. (Okla. Coop. Sur.).

ARMYWORM (*Pseudaletia unipuncta*) - SOUTH CAROLINA - Larvae found on rye in Fairfield County February 10, 1975. Collected and determined by C.A. Thomas. This is a new county record. (McCaskill).

CORN LEAF APHID (*Rhopalosiphum maidis*) - NEW MEXICO - Light, averaged less than one per linear foot, on barley near Roswell, Chaves County. (N.M. Coop. Rpt.).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - FLORIDA - Light, 130 specimens taken on 100 sweeps of alfalfa at Gainesville, Alachua County. (Fla. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

A BILLBUG (*Sphenophorus callosus*) - NORTH CAROLINA - Survey of insect damage associated with seedling corn was conducted during June 1974 in 38 Coastal Plain counties. Of 9,200 plants examined in 184 fields, 3.4 percent showed damage by *S. callosus* and *S. maidis* (maize billbug). Damage by *Conoderus* spp. and *Melanotus* spp. (wireworms) and *Diabrotica undecimpunctata howardi* (southern corn rootworm) totaled an additional 1.3 percent of plants examined. Determinations of adults collected indicated *S. callosus* was the predominant species in the Coastal Plain. *Heliothis zea* (corn earworm) was the primary foliage feeder, with one percent of 6,750 examined plants showing damage. An additional 0.6 percent of plants were infested with *Diatraea crambidoides* (southern cornstalk borer). (Hunt).

SMALL GRAINS

ENGLISH GRAIN APHID (*Macrosiphum avenae*) - MISSISSIPPI - Populations light on wheat and ryegrass in Oktibbeha County. (Robinson).

AN APHID (*Rhopalosiphum padi*) - TEXAS - Light in small grains in Archer, Baylor, Knox, and Throckmorton Counties. (Boring). KENTUCKY - Moderate in 30 percent of winter wheatfields in central area. Only an occasional alate *Rhopalosiphum maidis* (corn leaf aphid) collected. (Barnett).

GREEN STINK BUG (*Acrosternum hilare*) - ALABAMA - First adults of season noted leaving hibernation in search of food and ovipositing in Grand Bay area of Mobile County. (Goff, Lockhart).

BLACKFACED LEAFHOPPER (*Graminella nigrifrons*) - FLORIDA - Fifty-one nymphs and 158 adults collected in 100 sweeps of 18-inch tall oats (some seed heads developed) at Gainesville, Alachua County. This species vector of corn stunt organisms in some areas of the Southeastern United States. (Fla. Coop. Sur.).

WINTER GRAIN MITE (*Penthaleus major*) - TEXAS - Remained light in small grains throughout Rolling Plains area. Counts of 1-15 per row foot reported from few fields in Baylor and Throckmorton Counties. (Boring).

FORAGE LEGUMES

ALFALFA WEEVIL (*Hypera postica*) - TEXAS - Increased on clover and alfalfa throughout south-central and Uvalde areas. Heavy infestations requiring controls reported from Hallettsville area, Lavaca County. (Cole et al.). OKLAHOMA - Larvae ranged 1-9 per terminal in 80 percent of terminals in 2 alfalfa fields checked along Red River in Harmon County. Small number of adults active. Damaged terminals averaged 20 percent in Jackson County. (Okla. Coop. Sur.). KANSAS - Larvae increased in 2-inch alfalfa in Chautauqua County; averaged 0.3 per green stem 14 days ago, currently averaged 1.6 per stem. Larvae currently averaged 0.3 per 2-inch green stem in Montgomery County alfalfa field. Larvae mostly first instar with occasional second and third instars found. No larvae found in alfalfa surveyed in Meade, Seward, Haskell, and Hamilton Counties of southwest district; no green growth present. (Bell).

MISSOURI - Alfalfa weevil adults active in southwest area during 60-degree temperatures week ending February 21. Ranged 1.5-11 per 10 sweeps. Fresh oviposition scars noted in most alfalfa fields checked. Egg counts taken from two north-central and northwest area fields averaged 48 and 156.5 per square foot in Adair and Grundy Counties, respectively. (Munson). ARKANSAS - Survey for larvae negative in Washington County alfalfa. (Boyer). FLORIDA - Eighteen larvae taken in 100 sweeps of 12-inch alfalfa at Gainesville, Alachua County. (Fla. Coop. Sur.).

EGYPTIAN ALFALFA WEEVIL (*Hypera brunneipennis*) - ARIZONA - Larvae averaged 32 and adults 2.6 per 100 sweeps in 3 randomly checked alfalfa fields in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

PEA APHID (*Acyrthosiphon pisum*) - ARIZONA - Averaged 416 per 100 sweeps in 3 widely separated Maricopa County alfalfa fields. (Ariz. Coop. Sur.). NEW MEXICO - Counts remained less than one per square foot on alfalfa near Roswell, Chaves County. (N.M. Coop. Rpt.). OKLAHOMA - Acyrthosiphon pisum averaged 50 per square foot in alfalfa in Harmon County; reported light in Jackson County. (Okla. Coop. Sur.). ARKANSAS - Continued very light in alfalfa with only trace numbers found in legumes in Washington County. (Boyer).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - NEW MEXICO - Populations of up to one per trifoliolate leaf recovered from alfalfa at Hatch, Dona Ana County. Hippodamia convergens (convergent lady beetle) adults very active in these fields. (N.M. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

PEAR PSYLLA (Psylla pyricola) - OREGON - Dormant spray applications completed on commercial pear orchards in Rogue River Valley. Most treatments made February 22-25. Although not enough time has elapsed to evaluate degree of control, psyllid populations decreased with post-treatment counts of 1-2 adults per tray in sampled blocks. (Berry).

GREEN PEACH APHID (Myzus persicae) - OREGON - Eggs have begun to hatch on overwintering peach hosts at Hermiston, Umatilla County. Observations made February 24. (Goeden).

CITRUS

CALIFORNIA RED SCALE (Aonidiella aurantii) - CALIFORNIA - Adults infested Mandarin oranges in Orland, Glenn County. This scale insect was a problem in many areas of State during 1974. (Cal. Coop. Rpt.).

OTHER TROP. & SUBTROP. FRUITS

GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) - CALIFORNIA - Infested avocado foliage in Valley Center, San Diego County; 80 eggs, nymphs, and adults per leaf on avocado nursery stock. (Cal. Coop. Rpt.).

SMALL FRUITS

RASPBERRY CROWN BORER (Bembecia marginata) - OREGON - Overwintered second-year larvae averaged 2 per crown on 19 acres of evergreen blackberries and 1 per crown on 24 acres of boysenberries near Cornelius, Washington County, February 24. Both fields treated. Counts lighter in 5 other Washington County caneberry fields, except in one boysenberry planting near Hillsboro where borers averaged 4.5 per crown. (Collins).

ORNAMENTALS

BROWN GARDEN SNAIL (Helix aspersa) - OREGON - Light on containerized nursery stock, particularly Oregon grape (Mahonia aquifolium) just after offloading at Portland nursery, Multnomah County. All infested materials, total of 965 plants in 2 to 4-gallon cans, fumigated. Stock originated out of State. (Sjoblom, Nicolaison).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (*Dendroctonus frontalis*) - NORTH CAROLINA - Timber salvage efforts on State and Federal lands produced 9.9 million board feet during December 1974 compared to 3.2 million board feet December 1973. Pulpwood salvage decreased from 80 cords during December 1973 to 26 cords during December 1974. Total timber salvage during period July 1 to December 31, 1973, was 18.5 million board feet compared to 42.2 million board feet for same period during 1974. With greatly depressed lumber industry, losses from beetle-killed timber will apparently be greater than previous years. (USFS; Hunt).

MAN AND ANIMALS

SCREWWORM (*Cochliomyia hominivorax*) - Total of two cases reported from continental U.S. during period February 16-22, both from Texas. Total of 80 cases confirmed from Mexico. Number of sterile flies released in U.S. this period totaled 9,910,500, all released in Texas. Total of 109,268,100 sterile flies released in Mexico. (Vet. Serv.).

COMMON CATTLE GRUB (*Hypoderma lineatum*) - KENTUCKY - Larvae averaged 2.7 per animal on backs of 26 Holstein dairy cows of various ages in Fayette County. (Barnett).

FACE FLY (*Musca autumnalis*) - ALABAMA - Unusual numbers noted on sunny sides of buildings in Limestone County. Oviposition on fresh cow dung noted in west Colbert County. Heavy adult populations still in hibernation noted inside walls of residence at Athens, Limestone County. Population expected to be heavy in 1975 in northernmost 15-25 counties. (Patterson et al.). MISSISSIPPI - Adults active on buildings in Monroe and Chickasaw Counties. (Robinson).

HORN FLY (*Haematobia irritans*) - MISSISSIPPI - Up to 100 per head noted on some cattle in Jones County and up to 14 per head on cattle in Oktibbeha County, most with none. These are first occurrences. (Combs).

NORTHERN FOWL MITE (*Ornithonyssus sylviarum*) - OKLAHOMA - Heavy on flock of hens checked in Pawnee County. (Okla. Coop. Sur.).

BENEFICIAL INSECTS

LADY BEETLES - OKLAHOMA - *Hippodamia convergens* (convergent lady beetle) common in alfalfa and light in wheat in Jackson and Harmon Counties. (Okla. Coop. Sur.). MISSISSIPPI - Thousands of overwintering *Coleomegilla maculata* adults found congregating at bases of trees around corn and cotton fields in Lowndes County. (Robinson). ALABAMA - Some *Adalia bipunctata* (twospotted lady beetle) adults observed preying on aphids in pine trees in Bibb and Lee Counties. (Pigott et al.).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

ORIENTAL FRUIT FLY (*Dacus dorsalis*) - CALIFORNIA - Eradicative treatment continued in areas of San Diego, San Diego County, where adult flies and/or larvae occurred. Last fly detected

January 21, 1975. There has been sufficient time for at least one generation of Dacus dorsalis to have completed its life cycle. In addition to eradication measures, compliment of McPhail and Steiner traps being operated within quarantine area. Since there is no diapause period in this species, program of eradication is encouraging. (Cal. Coop. Rpt.).

RED IMPORTED FIRE ANT (Solenopsis invicta) - ALABAMA - Hundreds of alates noted at top area of numerous mounds in pasture at Loachapoka, Lee County. Swarming will occur soon. Stung field workers moving timbers in infested area. (Collier et al.).

WOOLLY WHITEFLY (Aleurothrixus floccosus) - CALIFORNIA - Detected in new area of Santa Ana, Orange County. Pest present in Los Angeles and Orange Counties where parasite releases being made as means of control. (Cal. Coop. Rpt.).

HAWAII INSECT REPORT

New State Record - Single adult of GULF WIREWORM (Conoderus amplicollis) taken in pit trap at Ewa, Oahu, during September 1974. Single adult taken in blacklight trap at Kunia, Oahu, November 2, 1974. Collections made by J.W. Beardsley. Determinations by T.J. Spilman. C. amplicollis has been recorded from North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Arizona, California, West Indies, and South America. Larvae feed on humus in soil, tubers and root crops, roots of various plants, and on sprouting grain. Larval hosts are sweetpotato, potato, corn and oats, lespedeza, and beans. Adults feed on pollen. Species has been found in sugarcane fields in some areas of Florida and in Cuba, but its importance to this crop is unknown. (Beardsley).

General Vegetables - DIAMONDBACK MOTH (Plutella xylostella) larvae caused moderate to heavy damage in 3 acres of head cabbage at Kula, Maui. Treatment since discovery gave excellent control. Light infestations observed in mustard cabbage in backyard plantings at Pearl City, Oahu. (Miyahira, Murai).

Fruits and Ornamentals - AN ARMORED SCALE (Pseudaulacaspis cockerelli) heavy in 100-foot row of oleander and on about 50 coconut trees at Kahului, Maui. About 80 percent of oleander leaves infested with 25-50 scales per leaf. Coconut trees had 50-200 scales per leaflet with about 50 percent of leaves infested. (Miyahira).

Forest and Shade Trees - Light infestations of an ADELGID (Pineus pini) found in 5 acres of Pinus sp. at Olinda Forest Reserve on Maui. Eggs and adults observed. Dieback noted on few heavily infested trees. (Miyahira).

Beneficial Insects - First field recovery of a PLATYGASTERID WASP (Amitus hesperidum) made at Kapahulu, Oahu, February 14, 1975, when 5 specimens emerged from rose leaves infested with Aleurocanthus spiniferus (orange spiny whitefly). Releases of Amitus hesperidum initiated in August 1974. Recent releases made from State operated insectary colony. A. hesperidum now fifth species found parasitizing orange spiny whitefly in State. One species of lady beetle also observed feeding on immature stages of orange spiny whitefly. (Au, Murai).

DETECTION

New United States Records - A SILVERFISH (*Nicoletia meinerti*) - OHIO - Franklin County. (p. 162). A SAWFLY (*Allantus viennensis*) - NEW YORK - Tompkins County. (pp. 163-165).

New State Records

A WEEVIL (*Smicronyx commixtus*) - ARIZONA - Adults taken in blacklight trap operated on ranch at Kirkland, Yavapai County, during period July 24-30, 1970, by J. May. Determined by D.M. Anderson. *S. commixtus* has been recorded from several other Western States. (PPQ).

A CHRYSIDID WASP (*Microsega bella*) - OKLAHOMA - Four females collected at Cookston, Cherokee County, October 13, 1974, by J.L. Bowman. Determined by A.S. Menke. These are only known specimens other than holotypes in U.S. National Museum. (Arnold).

New County Record - ARMYWORM (*Pseudaletia unipuncta*) SOUTH CAROLINA - Fairfield (p. 131).

CORRECTIONS

CEIR 25(7):67 - New County Records - "A WEEVIL (Otiorhynchus cribicollis) ..." should read "... (Otiorhynchus cribricollis) ..."

LIGHT TRAP COLLECTIONS

ARIZONA - Mesa, 2/17-23, BL, BEET ARMYWORM (*Spodoptera exigua*) 4, BLACK CUTWORM (*Agrotis ipsilon*) 1, VARIEGATED CUTWORM (*Peridroma saucia*) 19, YELLOWSTRIPED ARMYWORM (*S. ornithogalli*) 2. FLORIDA - Gainesville, 2/21-27, BL, ARMYWORM (*Pseudaletia unipuncta*) 2, beet armyworm 1, GRANULATE CUTWORM (*Feltia subterranea*) 4, SALTMARSH CATERPILLAR (*Estigmene acrea*) 1.

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1974

(Continued from page 120)

CORN, SORGHUM, SUGARCANE

Highlights: EUROPEAN CORN BORER decreased in several Corn Belt States as well as in Kentucky and Delaware. The overwintering larval population in the fall was the lightest recorded in Iowa, one of the lightest since the survey was begun in Illinois, and the lightest in the history of the survey in Minnesota. European corn borer was noted feeding on a crop in Florida for the first time. SOUTHWESTERN CORN BORER was serious in corn in Kansas and Alabama. SUGARCANE BORER was more of a pest in Florida sugarcane than for the past 10 years. CORN ROOTWORMS were of concern in several corn-growing areas. WESTERN CORN ROOTWORM extended its range in Indiana, Michigan, Missouri, and Idaho. NORTHERN CORN ROOTWORM was much more common in Indiana, CHINCH BUG expected to cause more problems in Nebraska if weather remains hot and dry in 1975. SORGHUM MIDGE ranged light to heavy on late sorghum in Texas. BANKS GRASS MITE was of some concern on corn in the Panhandle areas of Texas and Oklahoma.

The EUROPEAN CORN BORER (*Ostrinia nubilalis*) fall loss survey in KANSAS showed the average percentages of stalks infested and borers per 100 stalks to be somewhat below the 1973 figures in the northeast and east-central districts and somewhat higher than 1973 figures in all other districts, especially in the south east district. Percentages of infested stalks ranged from only 3 in the northwest district to 55 in the northeast, and borers per 100 stalks from 4 in the northwest to 92 in the northeast. This first European corn borer moth emergence of the season in MISSOURI was observed May 8 in the north-central area. Light larval populations and leaf feeding were observed during the first brood. Very few economic infestations were reported during 1974. Chemical treatments were recommended only in the southeast and northeast areas. The results of the 1974 fall abundance survey showed the average percent infestation to be 66.52, down from the 70.80 percent in 1973. Borers per 100 plants in 1974 averaged 108.50 compared to 166.71 in 1973. The average percent infestation and borer population per 100 plants decreased in all crop reporting districts except in the southeast where there was a slight increase.

The first generation of European corn borer was unusually light in NEBRASKA. Of 267 Clay County cornfields surveyed July 19, only 1.02 percent of the plants were infested with first-brood borers. The second generation was heaviest in the northeast district where plants in 25 fields averaged 77 percent infested with 166.1 borers per 100 plants. Most of the damage was due to stalk breakage, but much of the corn was recoverable as favorable harvest conditions allowed growers to harvest damaged fields earlier.

European corn borer moths were first detected in IOWA during the second week of June. Egg masses were discovered on 12 percent of some field corn in the southern area during the week ending June 21.

Peak oviposition occurred about 4 days later. Much corn in the southern area was too small for larval survival. Early European corn borer instars infested up to 40 percent of the plants in some extreme southern area fields. Adult flights were curtailed by the week ending June 28 in the central area. Heavy rains and cool evenings contributed to adult mortality and reduced oviposition. In the central area peak oviposition occurred June 12-15.

The first-generation infestation of European corn borer in Iowa was noted at only about 5 percent in fields in the central counties. Oviposition by second-generation adults peaked about July 16 in the central area. Hot, dry weather was detrimental to good survival. Overall, borer development was about 14 days ahead of 1973. Less than 100,000 acres were treated for control. Most damage was reported from southern and southeastern counties. The annual fall survey in Iowa was conducted during the week ending October 7 and showed the lightest overwintering larval populations recorded in the State. Only 21.2 percent of the plants were infested with 22.8 borers per 100 plants, a sharp reduction from 1973 populations. No problem from first-generation borers is expected in 1975.

European corn borer populations were of minor importance in ILLINOIS. The 1974 fall survey indicated one of the lightest second-generation larval populations since the survey began in the State. The overwintering population of 36 borers per 100 plants is 3.5 times lighter than that of 1973 (average 126) and about 3 times lighter than the 10-year average of 105. Only Gallatin and Madison Counties averaged 195 and 152 larvae, respectively, per 100 plants. The economic threshold is considered 300 larvae per 100 plants. The overwintering survival rate was 76 percent which is considered normal when compared to a 12-year average of 75 percent. The first-generation population surveyed in July indicated a statewide population of 4.6 borers per 100 plants. This is 4 times heavier than in 1973 but still average. Occasional "hot spots" were found and treated. Adams and Jasper Counties had averages of 24 and 23 borers per 100 plants, respectively.

The first spring pupation records of overwintering European corn borer larvae were taken in Massac County, Illinois, April 30 and indicated 36 percent pupation. Pupation reached 80 percent by May 14 at which time 12 percent moth emergence was noted. On May 28, emergence was nearly complete in Massac County (94 percent), had reached 20 percent in Champaign County, but had not yet begun in Ogle County, although pupation had reached 32 percent. During the week ending June 7, the first egg hatch was noted in St. Clair County and the first emergence was found in Ogle County. Whorl feeding averaged 50 percent by June 14 on corn 50-60 inches tall in Madison and St. Clair Counties. The number of egg masses ranged 21-44 per 100 plants in this area. Some stalk tunneling by third and fourth-instar larvae was noted in the southern half of Illinois July 3. About 127,000 acres were treated for Ostrinia nubilalis, mostly first-generation "hot spots," saving growers about 254,000 dollars over and above treatment costs.

Pupation of European corn borer was first observed in standing corn in a sheltered valley in Morgan County, INDIANA, May 15 and appeared to be complete or nearly so in the west-central district by May 22. The first adults were taken in Warren, Tippecanoe, and Randolph Counties the night of May 27. The first-generation moth flight peaked during the first week of June and continued until the first week in July. Oviposition was noted by June 11 in Kosciusko County on corn 7-8 inches tall (extended leaf height). First and second-instar larvae were taken in Harrison County during the same period.

The second-generation moth flight began and peaked during the week ending July 25 in the southwest district of Indiana and continued at least until the end of August. Summer-generation larvae averaged 3 per 100 stalks as indicated by a summer survey of 106 fields. This is about one-third of the 1973 population. The heaviest infestation was noted in the south-southwest district followed by the southwest, north-northeast, and north-northcentral districts, respectively. Pupation of the summer generation had already begun by August 14. An average of 26.8 larvae per 100 stalks, less than one-fourth the 1973 infestation and below the ten-year average, was noted during the fall survey which included 189 fields throughout the State. The heaviest district population, 87 larvae per 100 stalks, was in the south-southwest district. Populations in all other districts were about one-third that figure or lower with the south-central and south-east districts being the lowest, as usual.

Overwintering European corn borer larval mortality ranged 30-100 percent in a survey of 7 eastern counties of SOUTH DAKOTA during April and May. Adults were collected in a blacklight trap at Brookings May 19. The first-generation moth flight peaked during the third week of June and continued through the first week of July. Second-generation moth activity was heaviest during the last week of July. Trace parasitism by *Eriborus terebrans* (an ichneumon wasp) and *Sympiesis viridulus* (a eulophid wasp) was indicated in the 1974 spring larval collections. The fall abundance survey indicated a general light infestation throughout the State, with an average of 38 per 100 stalks. Two heavy population areas were found in Union and Moody Counties with 438 and 225 larvae per 100 stalks, respectively. No control treatments for European corn borer were reported in South Dakota during 1974.

In NORTH DAKOTA, winter mortality averaged 42 percent in untilled corn in Cass, Dickey, Ransom, Richland, and Sargent Counties. The fall infestation survey showed a decrease in these counties from 50 borers per 100 plants in 1973 to 15 in 1974. The percent plants infested also decreased from 32 in 1973 to 24 in 1974.

Overwintering 1973 European corn borer populations in MINNESOTA decreased from previous years. There was little increase in the first generation in spite of good weather during egg hatch in 1974. The second generation also made few increases and the lowest counts of overwintering borers in the history of the survey in the State were recorded. With overwintering populations at their lightest point in most districts and very light in others, the prospect for a light first generation in 1975 is very good.

Overwintering larval survival of European corn borer was 88 percent in WISCONSIN, compared to a 10-year average of 82 percent. Pupation began at advanced southern sites about May 22, and first moths had appeared in Mazomanie and Hancock blacklight traps by May 29. The first moth flight peaked about June 20. Eggs and larval feeding were noted on advanced corn the last week of June, but in many fields corn was not mature enough to support larvae. Larval development was rapid in July due to very hot temperatures. Larvae were heavy in corn in the central Sands area in mid-July, and treatment of sweet corn was begun in some areas. First-generation pupae were noted in the Mazomanie area by July 19 and the second moth flight had begun by August 1. As usual, development in the Lake Michigan area and in the northern counties of Wisconsin was as much as 2 weeks behind the rest of the State. As of August 1, there appeared to be a high potential for problems in late sweet corn, but the weather cooled early in August and remained so, resulting in poor reproduction and development of *Ostrinia nubilalis*.

During the fall European corn borer survey in WISCONSIN, first, second, and third-instar larvae were light in many fields. The fall abundance survey in 224 fields showed the second lowest population in 30+ years. By crop reporting districts, counts per 100 plants were: Northwest 26, north-central 22, northeast 19, west-central 25, central 8, east-central 10, southwest 11, south-central 2, and southeast 2, for a State average of 11 borers per 100 plants. Damage due to the first-generation of European corn borer was extensive in a few potato fields in central Wisconsin in mid-July. Damage was light in some snap bean fields in the Waushara and Racine County areas due to tunneling in stalks and pods by the end of July. Second-generation adults were observed in potatoes and corn in the central district August 6. By August 14, moth flights were increasing and many potato and snap bean growers increased spray schedules. Due to increased spraying and cool nights, which reduced flights and egg laying, problems from the second generation of European corn borer was not as severe as expected.

Compared to 1973, European corn borer moth counts were lighter in southern MICHIGAN light traps but heavier in the Oceana County area. Damage to all susceptible crops was held to a minimum. On the night of June 1, the first moths were collected in the Lenawee County blacklight trap, with 2 males and a single female taken the following night. Another three females and one male were collected June 3. Egg masses were first noted in the field June 14. The first generation was much lighter than expected and moth counts dropped to 2-3 specimens per night from June 25 until the second generation appeared July 23, with the collection of 8 males and 1 female in the Monroe County blacklight trap. During this same period, nightly collections in Lenawee County remained negligible until August 4. Nightly collections increased to a maximum of 154 during the period August 20-26.

European corn borer egg hatch began in late May in western and southern KENTUCKY and early June in the central and northern areas. By late June, most larvae were in the whorl or already in the stalk. Fall damage surveys indicated moderate damage in the State, with an average of 39.94 percent of plants infested.

In the western area, 37.7 percent of the plants were infested and 38.5 percent in the central area. Infestations were slightly heavier than in 1973 in Kentucky. The first seven moths of the season in VIRGINIA were detected in the blacklight trap at Blacksburg May 24. Peak catches occurred in late April and early May and appeared to be lower than 1973 although high winds during the peak flight weeks probably curtailed the 1974 catches. Treatments at 7-day intervals were advised at that time.

The fall European corn borer abundance survey was conducted in 1974 in 69 of the 100 counties of NORTH CAROLINA. Results deviated very little from a similar survey conducted in 1971. Infestation levels ranged from 1.6 percent of the cornstalks infested in Mecklenburg County to 80 percent in Hoke County with all the counties sampled being infested. The Coastal Plain again had the heaviest percentage of stalks infested, 43.8 percent. However, the Tidewater area contained the heaviest borer population per 100 plants with 41.4 compared to 35.2 in the Coastal Plain, 21.1 in the Piedmont, and 35.5 in the mountains. Stalk breakage again did not exceed 5 percent in any area sampled. European corn borer very lightly infested one small field of experimental sorghum at Greenwood, Jackson County, during July and August. Adults ranged 5-10 per night in a blacklight trap July through September near this infestation. This is first time Ostrinia nubilalis has been observed feeding on a crop in FLORIDA. No borers were noted in a planting of corn near this sorghum field. Surveys of sorghum, corn, and gladiolus fields elsewhere in northern Florida were negative.

The first European corn borer peak moth flighs on the Eastern Shore of MARYLAND occurred May 8-14, May 16-20 in Queen Annes, Kent, and Talbot Counties, and 10 days later in central Maryland. First-brood injury on the Eastern Shore varied depending on corn planting dates, but generally ranged 10-80 percent with 60 percent of the fields infested between late June and early July. Second-flight peaks started July 10 on the lower Eastern Shore and progressed west and north reaching central Maryland by the third week of July. Infestation rates on the Eastern Shore during July and August ranged 40-90 percent with all fields having some injury. Infestations in the central area during the same period remained subeconomic in all fields. A small third-flight peak appeared in early September. Generally, damage and population levels this season were normally moderate to heavy on the Eastern Shore and light with only spotty, moderate populations in central and southern areas. No controls were applied for European corn borer in Maryland field corn. Of the 10,000 acres of sweet corn for processing, about 60 percent received 1-3 treatments for control of Heliothis zea (corn earworm) and for European corn borer.

Pupation of European corn borer overwintering larvae began during the second week of April in DELAWARE, and by late April and early May was about 50 percent in Sussex County. First adults were collected in blacklight traps in Sussex County April 29 and first egg masses were collected on dock leaves May 7 in western Sussex County. Pupation was 85 percent complete by May 17. Adults averaged 36 per night in blacklight trap collections. Spring flights were unusually heavy indicating high overwintering survival rate in corn stubble. Egg masses were common on early planted corn during the last week of May. Moth flights from overwintering larvae were completed by late June when the first pupation of first-generation borers occurred in Sussex County. By mid-July, first-generation adults ranged 25-40 per night in western Sussex County light trap collections. The heaviest season flight peak (about 50 per night) occurred in late August and early September. Fresh egg masses were present on late-planted corn through September 30. The extreme drought conditions in July is most likely responsible for the unusual delay in these adult flights. The State average fall population of 321 borers per 100 corn plants, 21 percent lighter than that of 1973, is indicative of the very heavy European corn borer populations in Delaware.

The first pupation of European corn borer in NEW YORK was observed May 13 at Geneva, Ontario County, and May 16 in the Highland area of Ulster County. At the latter location, the first blacklight trap catches of moths occurred May 18, seven days earlier than in 1973. The first male moths were caught in blacklight traps during the nights of May 27 and 30 at Geneva, Ontario County. Peak flight activity of the first generation occurred during the period June 4-8. Flight activity extended until June 23. On June 10, the first two egg masses were found on Erie County sweet corn beginning to tassel. Two egg masses were found June 14 in a cornfield near the Albany airport, Albany County. Second-brood male moths were caught in a blacklight trap at Geneva July 29 and females were caught August 2. Moth flights increased significantly starting about August 10 and peaked during the week of August 16-23. In Ulster County, peak flights of second-brood moths occurred during the week of August 23-29. In spite of heavy moth flights in the Geneva area, oviposition was light. Cornstalks with borers averaged 1-2 percent in most fields throughout Niagara, Erie, and Chautauqua Counties. Some fields, especially corn started under plastic, in Niagara County had about 50 percent of the stalks infested. Heavy infestations of greater than 50 percent of the stalks with borers were noted in Cayuga, Onondaga, and Monroe Counties.

The European corn borer survey in VERMONT field corn showed 20.6 percent of the plants infested with an average of 41.8 borers per 100 plants. Increases were reported in Caledonia, Essex, Orange, and Orleans Counties, with counts of 51.6, 8.8, 46.2, and 30.9 borers per 100 plants, respectively, in 1974 compared to 3.2, 3.0, 32.8, and 21.8 borers per 100 plants in 1973. Essex County continued to have the lightest population with 4.8 percent of the plants infested with an average of 8.8 borers per 100 plants, while Grand Isle County had the heaviest population with 27.6 percent of the plants infested with an average of 55.8 borers per 100 plants. Second-brood adults were reported in flight in Chittenden County this year during the second full week of August. Most growers did not apply treatments for this pest. Corn acreage increased in excess of 80,000 acres for grain and silage purposes in Vermont in 1974.

Many European corn borer larvae did not pupate in MAINE until very late, if at all, in cornstalks that were not plowed under the third week of June. Moths were almost absent in the first blacklight collection July 2, peaking July 11 and ending July 24. Overall infestations decreased 60 percent from those of 1973.

One field near Dexter, Penobscot County, on a corn-following-corn rotation continued to be the field with the heaviest infestation, about 15 percent, in the State. No-till corn and/or corn following corn continued to harbor the heaviest infestations of Ostrinia nubilalis with the corn and potato rotation being slightly less than other cornfields. An average infestation of 2.5 percent with a 5 percent loss caused an estimated loss of 60,000 dollars to dairy growers.

SOUTHWESTERN CORN BORER (Diatraea grandiosella) damaged some corn by early September in Roosevelt County, NEW MEXICO. Infestations were light in corn in southeastern Valencia County. None were found in Bernalillo and Sandoval Counties. This pest was common in corn grown in Quay and Union Counties with up to one larva in 2 stalks common. None were found in corn grown in Colfax County. Late season surveys in Eddy and Chaves Counties indicated about 75 percent of stalks inspected were infested with 2 or more larvae. First-generation larvae were present in corn in the panhandle counties of OKLAHOMA in late June and July. Second-generation larvae were present by early August. Surveys the first week of October showed averages of 15.6 percent of stalks girdled and 7.7 percent lodged. Infestations were heaviest in Texas County where girdled stalks ranged up to 77 percent and lodged stalks up to 55 percent.

Southwestern corn borer was a serious corn pest in KANSAS in 1974 and caused considerable losses to growers. Results of a survey made in September and October showed the heaviest infestations occurred in Barton, Ellis, Rice, Kiowa, Pawnee, Pratt, Stafford, Stevens, Morton, and Ness Counties. At least some fields surveyed in each of these counties had 50 percent or more infested stalks. In two Pawnee County fields surveyed during mid-October, after most had been harvested, showed up to 60 percent lodging as opposed to a high of 20 percent about mid-September when the initial survey was made. Up to 52 percent lodging was noted in infested fields in Ellis County and 40 percent in Rice County during late September. Corn growers in the more seriously affected counties were very concerned, especially in view of the lack of effective control methods available. A mild winter, allowing high survival of overwintering larvae, could result in much more widespread and devastating infestations in Kansas in 1975.

Southwestern corn borer infestations in southeastern MISSOURI ranged 2-81 percent with 1-6.5 larvae per corn plant in late July and early August. Light populations were observed in irrigated corn in the southwest area in late August. Infested plants ranged 0-23 percent with 1-3 larvae per plant. The 1974 fall survey in the southeast area showed the percent of infested plants to be 59.2, an increase from the 34.5 percent in 1973. The 1974 average percent girdled plants was 17.52, up from 11.58 in 1973. Damage to corn in KENTUCKY was heavier than in 1973. Larvae averaged 0.55 per stalk in Todd County. Southwestern corn borer was a serious pest to corn in northwest and central northern ALABAMA. Of the 67 counties in the State, 42 are known to be infested. The first larvae of the season (first, second, and third instars) were noted in Limestone County June 18.

SUGARCANE BORER (Diatraea saccharalis) was noted as more of a pest in 1974 than in the past 10 years in FLORIDA. The average sugarcane loss in the State in 1974 was 7 percent compared to a 10-year average of 5 percent. About 40,000 acres needed treatment, but only 10,000-15,000 acres were treated. Combined cost of treatment plus value of sugar loss was estimated at 17,000,000 dollars. SOUTHERN CORNSTALK BORER (D. crambidoides) infestations during late June were heavy in early planted corn in central Sussex County, DELAWARE. In this area, some corn plantings had about 50 percent of the "borer" infestations represented by this species with 3 and 4 D. crambidoides per stalk not uncommon.

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) observed to be more damaging to corn in FLORIDA during 1974. Numerous heavy infestations were reported from the central to the northern areas during spring and early summer. Some stands suffered 90-100 percent loss and had to be replanted. Much greater damage was caused in 1974 than in the previous 4 years. An estimated 30 percent of the acreage had reduced stands due to feeding in May and June. Corn in sandy areas of fields was usually more heavily infested than that in heavier soils where water was retained better. By May 8, 15 acres of sorghum were destroyed in an Alachua County planting, and at least 200 acres of a 400-acre stand of sorghum at Bartow, Polk County, were destroyed. E. lignosellus caused much damage to some late-planted soybean fields in Walton County during June. About one square mile of soybeans was economically damaged on a farm at Quincy, Gadsden County about the first of July. A 20-percent stand loss occurred in a 90-acre field north of DeFuniah Springs, Walton County, in late July. This was the second planting,as the first had been destroyed by this species. Generally, the older soybean plantings in the area between Walton and Gadsden Counties did not show damage. Only 50 acres of sandhill land in peanuts were economically infested in Alachua and Levy Counties during July. Populations in the northern part of Florida were generally lighter and damage was not as extensive in 1974 as in 1973.

Lesser cornstalk borer was one of the major corn insect problems in SOUTH CAROLINA. Economic damage occurred from June until October. Damage was severe in some no-till plantings and damage also occurred in some "clean" plantings. Dry weather usually makes this species more damaging, but damage was observed this year in areas with adequate moisture. Fall or winter clean-up of the fields and field margins and rotations with crops not damaged would aid in the prevention of infestations. Heavy populations damaged dryland sorghum in sandy areas of OKLAHOMA from late June to late August. Damage was reported from Greer, Cotton, Garvin, Caddo, and Washita Counties. Damage to corn was reported in Beckham County and to hybrid Sudan grass in Cleveland County.

FALL ARMYWORM (Spodoptera frugiperda) developed heavy, damaging infestations on silage corn in Clark County, NEVADA, in September with almost all plants infested in some fields. Larvae of this noctuid caused much damage to sorghum in Luna County, NEW MEXICO, during late July, with 30 percent of some fields "flagged" and every sixth infested plant showing significant inflorescence damage. Some damage was also reported from Grant and Hidalgo Counties. By mid-August, nearly one-half of the sorghum plants in Luna County showed some damage. Larvae infested sorghum in the western half of OKLAHOMA from mid-June to late September. Heavy infestations of 70-100 percent were reported in most southwest and west-central counties and a few central and south-central counties from mid-July to mid-August.

Fall armyworm infestations in whorl-stage corn and sorghum were less common in KANSAS in 1974 than in 1973, with the few damaging infestations reported being confined to counties of the south-central and southwest districts. Infestations in MISSOURI were light (1-6 percent of plants infested) on late-planted corn. Heavy infestations of 12-100 percent were observed in the south-central area. Fall armyworm larvae were no problem in MISSISSIPPI on corn planted before June as in 1973. However, corn planted in June in Pearl River County was seriously damaged and silage yield was reduced up to 75 percent as a result of larvae feeding in whorls and ears.

Fall armyworm was destructive to buds and ears of sweet corn in FLORIDA and continued as a major pest in the Everglades area. Infestations were moderate on sweet corn during fall at Bradenton, Manatee County, and caused some damage to sorghum in Jackson County along with Heliothis zea (corn earworm) and Celama sorghiella (sorghum webworm). Light larval populations of S. frugiperda were noted on Panicum purpurascens (Para grass) in the Everglades area of Palm Beach County during April. Populations in the Orlando area of Orange County appeared lighter than in 1973. Larvae continued to damage peppers in eastern Palm Beach County where treatments were eased. The overall population in Florida seemed lighter than in 1973. In NEW YORK, heavy fall armyworm populations were noted in many whorl-stage sweet corn plantings throughout Ulster County during the week of August 26 to September 2.

BEET ARMYWORM (Spodoptera exigua) larvae heavily damaged young sweet corn plants during late winter and early spring at Homestead, Dade County, FLORIDA, being destructive to the buds and foliage. Larvae were particularly damaging to young sweet corn in the Everglades area. This species is more difficult to control than other noctuids, and there is a narrower choice of insecticides. Larval and adult populations were very heavy on field corn at Hastings, St. Johns County, during May. Growers were forced into spray applications on this field corn.

BLACK CUTWORM (Agrotis ipsilon) injury by larvae was sustained by young corn grown for grain in INDIANA because of delayed planting, or replanting, especially in the northwest district. Ten acres of a 45-acre field in Fountain County, 60 percent of 30 acres in Jasper County, and all 95 acres in Cass County were among the most affected. Larvae ranged from 3 per 100 stalks to 3 per 25 stalks. Flights peaked in Tippecanoe County in mid-May, mid-July, and mid-September, with good flights throughout July. Damage to corn grown for grain was considered very light, with only 16 fields reported infested in the State. Of 300 closely observed fields throughout the State, infestations was found in only one and that was light. Black cutworm infestations in ILLINOIS were common, ranging from one cut plant per 500 corn plants the week ending May 24 to a 30 percent infestation June 2 in St. Clair County in a random county survey in the west-southwest and southwest districts. Infestations ranged 4-10 percent damaged plants in most fields. Almost 57,000 acres were treated, saving 341,000 dollars over and above treatment costs. Treated acreage was 39 percent less than in 1973.

Black cutworm infestations ranged light to moderate in some scattered fields throughout the corn-growing areas of MISSOURI. Spots in some fields needed to be replanted. Larvae of this noctuid caused little damage to corn and sorghum seedlings in KANSAS in 1974. Heavy infestations of *A. ipsilon*, *Peridroma saucia* (variegated cutworm), and other cutworms caused severe damage to young grain sorghum in Calhoun and Jackson Counties, TEXAS, as early as mid-March. Damaging populations were noted the rest of March and into early April in many south-central area counties. Black cutworm larvae heavily damaged corn in Union County, KENTUCKY, early in the growing season.

Very light populations of black cutworm caused only light damage, less than 10 percent of the corn plants in a field, in Washington County, NEW YORK. Heavy damage, approaching 100 percent of the plants, was noted in a 5-acre cornfield in Onondaga County, on about 5 acres of a 20-acre field in Cayuga County, and on about 5 acres in each of 4 fields throughout Wyoming County. All damage was observed before mid-June.

STALK BORER (*Papipema nebris*) damage to corn in KENTUCKY was light during the early part of the growing season. Damage continued to increase and by the last of June, heavy infestations caused the loss of several hundred acres in Nelson, Hardin, Pulaski, Mercer, and Bourbon Counties. Stalk borer caused increased problems on corn in IOWA during 1974. Early damage was reported from reduced tillage fields in the central area during the week ending June 7. Additional damage was reported from central and western area fields through the week ending June 28. Activity had subsided by the first week in July. Damage, with stand reduction up to 50 percent, was reported from seven counties across the State. Larvae became evident on corn by mid-June in WISCONSIN, with 10-15 percent of plants in margins infested in some southwestern area fields. Larvae were three-fourths grown by mid-July and pupae were numerous early in September. Stalk borer moths were caught in blacklight traps from mid-September and were still active around incandescent lights as late as October 28.

SORGHUM WEBWORM (*Celama sorghiella*) infestations ranged moderate to heavy in sorghum in the southeast area of MISSOURI during late August and early September. Larvae ranged 20-300+ per 100 heads. Sorghum webworm was ranked as the second important pest of sorghum in ARKANSAS in 1974. Infestations were light and averaged lighter than in past years. Only one percent of the sorghum acreage in the State was estimated to have been treated for this pest. It also is estimated that there were no production losses. Infestations in sorghum were lighter than normal in SOUTH CAROLINA.

The survey for adults of CORN ROOTWORMS (*Diabrotica* spp.) conducted in ILLINOIS in August indicated populations had decreased 15 percent from the 1973 levels. Decreases were noted in 7 of 9 districts and no beetles were found in the 4 southernmost districts. Populations declined from 71 to 64 beetles per 100 plants in the northern 5 districts. Of the total beetles recorded, 39 percent were WESTERN CORN ROOTWORM (*D. virgifera*). Late instar larvae and prepupae were found in Marshall and Stark Counties July 3. The first NORTHERN CORN ROOTWORM (*D. longicornis*) adults were seen the week of July 8 in Massac County as were the first *D. virgifera* adults in Henderson County. About 30,000 acres were treated for adult rootworms with 6,014,000 acres treated for the soil insect complex, mostly rootworms, saving growers an estimated 120,000 dollars and 28,176,000 dollars, respectively, over and above treatment costs.

Corn rootworm egg surveys in WISCONSIN in fall 1973 indicated a potential for severe damage in many cornfields and in many areas in 1974. The State average count was 6.23 per pint of soil. Larvae were noted at Arlington, Columbia County, in untreated corn plots June 20, 1974, and 6 per root were found by July 1. First adults of *D. longicornis* and *D. virgifera* were observed in Rock and Dane Counties by July 17. Root damage (lodging) became evident after a rainstorm in the southern counties July 19. By August 1, a few cornfields in Rock County had average counts of 3 beetles per plant, and by late August individual southern and western area fields had as many as 8 beetles per plant. Extensive silk feeding was noted in a few late fields of grain corn and sweet corn, but in most instances after pollination was complete.

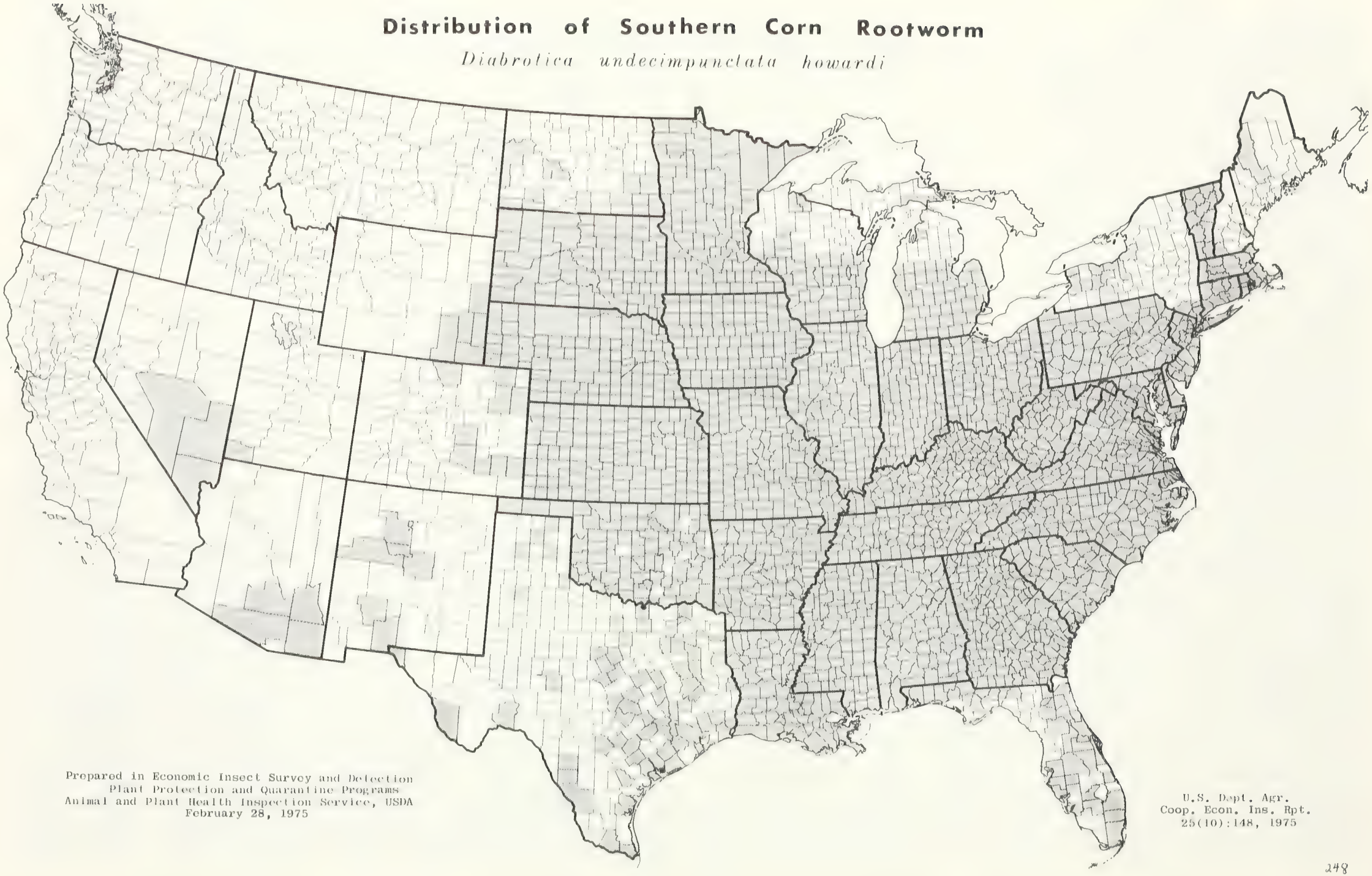
Corn rootworms were noted laying eggs at Arlington, Wisconsin, the second week of August. Adult emergence was not complete until about September 1, but this was reflective of the slowdown of development and activity due to cool weather in August. An adult survey conducted late in August and early September showed a State average of 1.15 adults per plant in 225 fields surveyed, or twice the average of 1973. Egg laying conditions late in August and early September appeared to be favorable, suggesting a high potential for damage in the spring and summer of 1975 in Wisconsin.

The adult corn rootworm survey in Wisconsin showed *D. longicornis* to be dominant statewide, comprising 58 percent of all rootworms present. SOUTHERN CORN ROOTWORM (*D. undecimpunctata howardi*) constituted only 0.1 percent of the statewide adult rootworm population. Damage (lodging) was relatively heavy, 4.1 percent on a statewide basis when surveyed in early October compared to 2.3 percent in 1973 and a 10-year average of 2.86 percent. A very high percentage of lodging was observed in the southwest district on slopes and appeared to have resulted from erosion of chemicals from the row and/or dissolving of certain insecticides in water. Lack of treatment did not appear to be the cause of lodging in most fields in southwest Wisconsin.

Corn rootworm larvae were first detected in southern IOWA cornfields during the week ending July 5. Heavy feeding damage was noted in most counties in the western third of the State. An increased larval population was noted statewide. Treatments applied to more than 50,000 acres of corn failed to give adequate protection. Adults were first noted in Boone County during the

Distribution of Southern Corn Rootworm

Diabrotica undecimpunctata howardi



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week ending July 9. Silk damage due to adult feeding was reported from southern counties by July 11. Drought-stricken plants in the western area were severely affected. Damage continued through mid-August. Populations ranged up to 20 per plant in some central area counties. Nearly 100,000 acres of field corn were treated for the control of corn rootworms in Iowa during 1974.

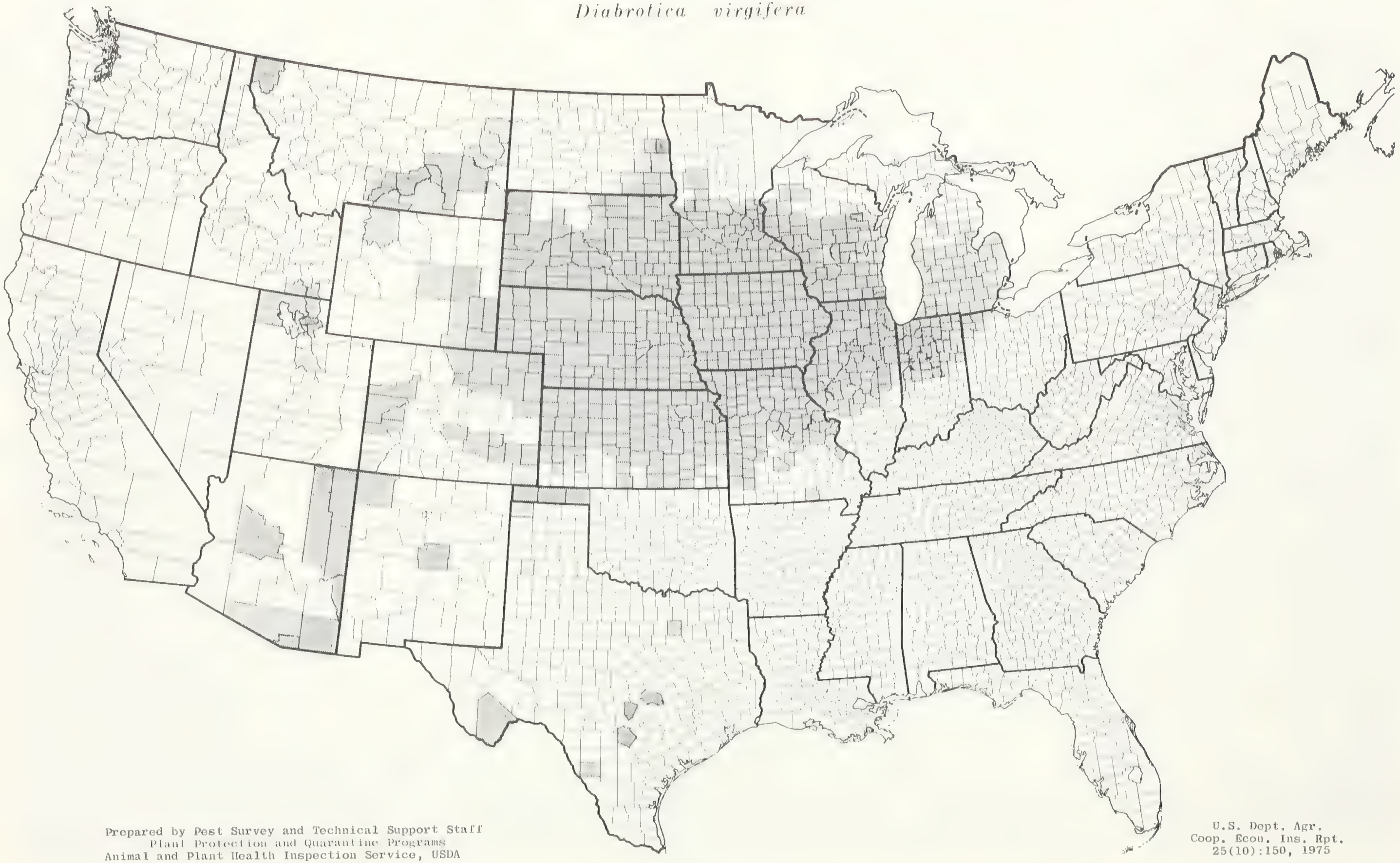
An adult corn rootworm survey was conducted in 54 counties of the main corn-growing areas of MINNESOTA. Five fields were randomly chosen and beetles were counted in fields that were in corn the previous year. The survey showed an increase in all districts except the south-central district, where decreases were indicated. A twofold increase was noted in the southwest and west-central districts. Of much interest was the threefold increase in lodging over the previous years. Beetles averaged 53,114 per acre in the southwest district, with increases noted in five counties. The heaviest population per acre was found in Rock County. In the south-central district, populations averaged 25,074. Although the populations were still heavy, this was the only district that recorded a decrease. Populations increased in 6 counties in this district and decreased in five. Populations were heaviest in Watonwan County. Populations increased in four southeast district counties and decreased in five counties. This was the third highest district with 33,874 beetles per acre. The heaviest counts were noted in Winona County, but there was only a small amount of lodging.

In the west-central district of Minnesota, corn rootworm adult populations increased in seven counties and decreased in three. The largest increase of all districts was noted in Lac qui Parle County with 38,549 beetles per acre, a 69 percent increase over 1973. In the central district, populations were noted at 26,322 per acre with increase in seven counties and decreases in three. The heaviest population was noted in Scott County. In the five survey fields in the central district, two fields with no infestations were found. Beetles averaged 18,805 per acre in the east-central district, the lowest of all districts. Three counties had increases and two had decreases. The heaviest population was noted in Hennepin County. The overall ratio of *D. virgifera* to *D. longicornis* is close to 50:50 with *D. virgifera* having a slight edge at 51 percent. All districts have high populations and a good potential for increased damage in 1975. The most severe damage can be expected in corn that follows corn in rotation. Growers not using a rotation that includes other crops should plan to use soil insecticides to prevent damage.

Corn rootworms were the most serious insect problem in the major corn-production areas of SOUTH DAKOTA. *D. virgifera* dominated the species mix (90 percent) of the population. *D. longicornis* constituted 10-20 percent of the population. Some specimens of *D. undecimpunctata howardi* were observed. Eggs hatched during the last 14 days of June in all plots. Second-instar larvae were noted in Madison and Brookings June 19 and at Beresford June 24. Larvae ranged 70-100 per plant at Beresford, 30-70 at Madison, and 40-90 at Brookings. Some larval mortality occurred due to insufficient root mass to sustain larvae. Adults were first noted July 10 in the Beresford area, 25 per plant being common during the third week of July. Drought, early frost, and increased corn acreage cut for silage forced beetle migration. Heavier populations are expected in irrigated cornfields and in first-year

Distribution of Western Corn Rootworm

Diabrotica virgifera



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corn in 1975. Soil insecticides provided satisfactory control for most growers in South Dakota.

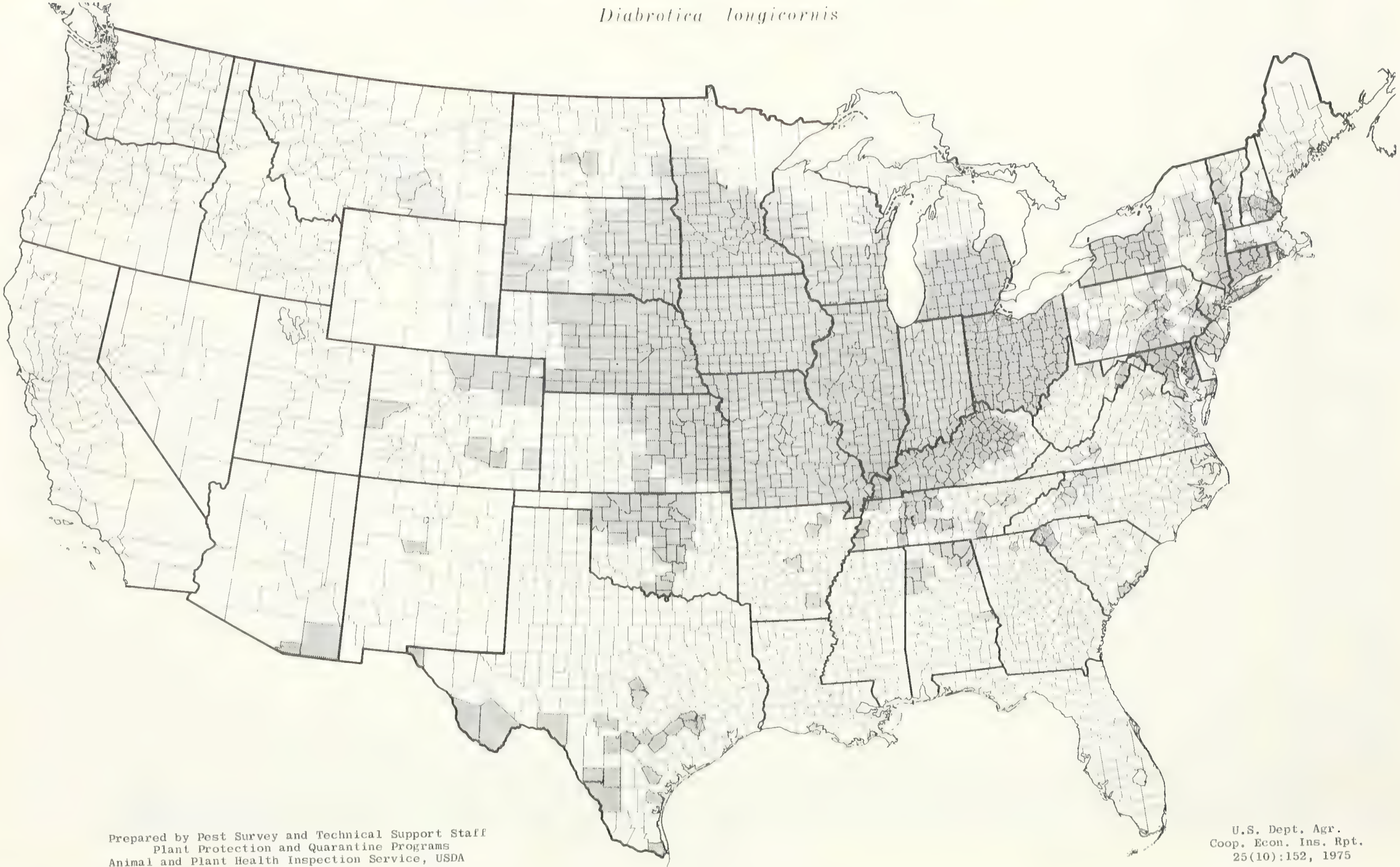
Population development of Diabrotica virgifera and D. longicornis in NEBRASKA appeared to be much more rapid in 1974. Egg hatch and first and second-instar larvae were reported at Mead, Saunders County, June 4. By June 12, larvae averaged 0.65 per plant in 227 Clay County cornfields, with 13 of these fields having 5+ larvae per plant and 76 fields with no larvae. By June 21, full-grown larvae and pupae were common in 278 Clay County fields. Larvae averaged 0.8 per plant, with 32 of these fields recommended for emergency treatment. No specimens were found in 99 of the fields. Rootworm adults peaked in late July and early August with very heavy populations recorded in scattered individual fields. Populations generally ranged 0-5 per plant in most central area fields with scattered single fields nearing 12-15 per plant. Some of the heavily infested fields suffered 15-20 percent pollination reduction due to beetles feeding on silks. An October survey showed 12 of 125 fields (9.6 percent) with some lodging at 30 degrees or more from the vertical. Percent lodging ranged 2-80 percent, and averaged 22.25 percent in the 12 fields. The heaviest levels of infestation in Nebraska were noted in the northeast, east, and southeast crop districts. Rootworm damage was verified by pulling and examining the roots of lodged plants in each field.

Corn rootworm larval infestations, as usual, caused heavy damage in many untreated KANSAS cornfields and planting time soil insecticides failed to give good control in more cases than usual in 1974. An estimated 128,255 acres of corn was treated for adults feeding on silks. Most of this treated acreage was located in the southwest, northwest, and northeast districts. The principal species involved was D. virgifera.

WESTERN CORN ROOTWORM (Diabrotica virgifera) second-instar larvae were collected in a field of corn grown for grain June 17, indicating egg hatch in the northwest district of INDIANA about June 10. By July 10, 10-15 percent of larvae had pupated and 7 percent emerged as adults but remained in the soil in the same area. Adults were taken in Porter County on the same day. Adults were noted in the north-northwest district during the summer survey in 90 percent of the fields compared with 36 percent in 1973. In the north-northcentral district, 83 percent of fields were infested compared with 17 percent, in the north-northeast 71 percent were infested compared with none in 1973, in the northwest 10 compared with none, and in the north-central district 25 percent compared with 13 percent in 1973. Populations increased significantly in 1974, ranging 48-117 per 100 plants as compared with 0-16 in 1973. Adults were taken for the first time in Steuben, Adams, Wells, Warren, Montgomery, Parke, Howard, Grant, Tipton, Madison, Boone, Blackford, and Jay Counties. The addition of these counties brings this species further into territory which is more favorable for its development. Some corn damage was noted but losses amounted to probably less than 1,000,000 bushels.

Distribution of Northern Corn Rootworm

Diabrotica longicornis



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Western corn rootworm continued to spread in MICHIGAN, being recorded for the first time in 14 counties, and is now known to occur in the counties that produce 97 percent of the corn in the State. In southern portions of the State, damage by *D. virgifera* has compounded the damage of *D. longicornis*. Also, in more northerly areas where *D. longicornis* has not been of major importance, *D. virgifera* has become established and is now of much economic importance. It is evident that the greatest impact of *D. virgifera* will be in the more northern counties of Michigan where damage from *D. longicornis* has been light in the past.

Western corn rootworm adult populations in NORTH DAKOTA averaged 20 per 100 plants in Dickey County, 10 in La Moure County, and 12 in Barnes County during early September. Twenty-four percent of the cornfields in Cass, Richland, Ransom, Sargent, and Dickey Counties showed lodged or goosenecked plants due to rootworm damage during late October. The first larval western corn rootworm populations of the season in MISSOURI were reported from the central and northern areas June 20. The first adult emergence was from the same areas July 6. Adult populations were heavier than during the past several years. Damage, due to drought, was more in evidence this season than ever recorded in the State. These heavy adult populations indicate heavy egg deposition for the coming season. Adults were collected in Jefferson, Maries, and Ste. Genevieve Counties for new records in 1974. *D. virgifera* was collected from corn at Stoutland, Laclede County, and at Richland, Pulaski County, July 24, by R.E. Munson. These are new county records.

Western corn rootworm larvae were moderately heavy on corn in the McIntosh area of Torrance County, NEW MEXICO, during August and September. Western corn rootworm larval damage was common where preplanting chemical treatment had not been applied in UTAH. Most infested farmland had been treated to protect both fields and sweet corn acreages which greatly reduced crop injury. Much control was applied to protect silking ears from injury when adults became heavy. Western corn rootworm was collected for the first time in Oneida County, IDAHO. Populations reached up to 30 per corn plant where they destroyed all roots. Adults in Franklin County were heavy enough to interfere with pollination in several fields.

NORTHERN CORN ROOTWORM (*Diabrotica longicornis*) lodging damage has remained somewhat light to moderate in MARYLAND over the past four years. The heaviest injury in 1974 was centered in Carroll, Baltimore, Howard, Frederick, and Harford Counties where about 45,000 acres received preventative preplant insecticide treatments. Although larvae were active in all other counties, losses never exceeded 1 percent, whereas losses in untreated fields in the central area varied 1-4 percent. Population levels continued to increase slightly in all areas outside the above-mentioned counties. Losses and significant increases were minimal due to the widespread use of preplant treatments in the central area. Isolated, extremely heavy northern corn rootworm populations feeding on corn silks in KENTUCKY reduced pollination. Adults averaged 15 per ear in the heaviest infestation. Northern corn rootworm adults were much more common in INDIANA than in 1973. Fifteen percent pupation was noted in a cornfield for grain by July 12. Infestations were observed in

30-57 percent of fields in districts north of Indianapolis compared to only one field in 1973. South of Indianapolis, it was noted in 8-33 percent of the fields compared to 0-40 percent in 1973. Damage to corn grown for grain was negligible in Indiana in 1974.

CORN FLEA BEETLE (*Chaetocnema pulicaria*) populations in Madison and Monroe Counties, ILLINOIS, averaged 32 and 37 per 10 plants, respectively, May 22. Up to 12 beetles were noted on individual plants. Populations were serious enough that 84,300 acres were treated saving about 126,500 dollars over and above treatment costs. Corn flea beetle infestations in MISSOURI were light to moderate, 1-16 per plant, in the southwest, east-central, and northeast areas. These infestations lasted longer than normal due to the cool, wet spring. Corn flea beetle was heavy in seedling corn in Sedgwick County and in several counties of the southeast and east-central districts of KANSAS in late May. It also damaged late sorghum in early July in the northeast district. About 10,800 acres of corn and 1,000 acres of sorghum were treated in 1974. Most of the treated corn (9,600 acres) and all the sorghum was in the southeast district.

Several species of WIREWORMS caused serious problems in a few new cornfields in WISCONSIN due to many acres formerly in sod and alfalfa being put into corn production in spring 1974. Damage occurred in Wood, Marathon, Chippewa, and Trempealeau Counties. About 400 acres were known to be replanted in Wood County, and an unspecified acreage replanted in Marathon County. *Melanotus communis* was generally not as damaging to corn in the Everglades area of Palm Beach County, FLORIDA, as during the previous season. During late April and early May, this species caused a 20 to 40-percent loss of stand in a 2,200-acre planting of sweet and field corn at Oklawaha, Marion County. About 80,000 acres of sugarcane were treated at a cost of 1,360,000 dollars. The loss, in spite of treatment, is estimated at 6,640,000 dollars. Total losses due to this pest are estimated at 8,000,000 dollars in Florida.

MAIZE BILLBUG (*Sphenophorus maidis*) infestations in combination with those of *S. callosus* continued to cause some damage across SOUTH CAROLINA. *S. callosus* caused moderate to heavy damage in the major corn-growing areas. Present control measures do not afford practical effective control of *S. callosus*.

CHINCH BUG (*Blissus leucopterus leucopterus*) damaged scattered fields of corn and grain sorghum that bordered on fields of small grain in NEBRASKA during June. Economic populations were noted in Gage, Jefferson, Pawnee, Richardson, Johnson, and Lancaster Counties. More problems are expected in 1975 if conditions remain hot and dry. Chinch bug was of little economic importance on corn and sorghum in KANSAS in 1974, although it was somewhat more troublesome than in 1973. An estimated 22,900 acres of sorghum and 3,400 acres of corn were treated for chinch bug in the eastern area of Kansas in 1974. Spotted chinch bug infestations were noted in central TEXAS. The heaviest infestations were reported from Grimes and Milam Counties. Treatments were needed in some Milam County areas the week of May 3.

SOUTHERN GREEN STINK BUG (*Nezara viridula*) adults and nymphs caused economic damage to corn in southern MISSISSIPPI in George, Perry, Wayne, and Covington Counties from mid-June to early July. The heaviest population was noted the third week of June when nymphs and adults ranged 5-20 per plant.

Populations of an APHID (*Rhopalosiphum padi*) reached damaging levels on late corn throughout IDAHO. Damage was much more severe on fields treated for *Heliothis zea* (corn earworm).

SORGHUM MIDGE (*Contarinia sorghicola*) ranged from light to heavy on late grain sorghum in TEXAS during 1974. Increasing populations were noted in the south-central area during late May. During the same period, light to heavy infestations were noted on sorghum in Falls, Coryell, Hill, and Bell Counties. By early June, populations were decreasing in south-central and central area fields. At this time *C. sorghicola* adults ranged 0-1 per 5-8 heads. Populations of 10-40 per head were reported on untreated grain sorghum in the Uvalde area by mid-June. Economically damaging populations were also noted in isolated fields of late-blooming grain sorghum in Hill and Ellis Counties. Most fields within this area (north-central) were infested with very light populations. Total midge emergence in sorghum on the High Plains for 1974 was much lighter than in 1973.

Sorghum midge ranked first among those insects that required treatment in ARKANSAS during 1974. Generally, infestations were below treatment level in many sorghum fields. Treatment was necessary in less than 10 percent of the fields in the extreme northeast area where the acreage is larger than in other areas. Only 2 percent of the acreage was estimated to have been treated in the State as a whole. Little, if any, loss in production was attributed to this species. Sorghum midge adults moved from Johnson grass to grain sorghum from mid to late June through September in MISSISSIPPI. Sorghum blooming in mid to late August suffered 25-30 percent seed loss in Noxubee, Oktibbeha, Montgomery, and Hinds Counties.

SEEDCORN MAGGOT (*Hylemya platura*) caused the loss of a small planting of April sweet corn in Monroe County, NEW YORK, prior to May 20. Some stand reduction was observed in about 100 corn fields (1,000 acres) throughout Niagara, Orleans, and Genesee Counties prior to July 24. About 6 of these fields required replanting. Heavy loss and replanting were also reported on about 25 acres of corn near Granville, Washington County. Flies were trapped prior to May 6 in the Geneva area, Ontario County, and in the Hudson Valley in Ulster County.

BANKS GRASS MITE (*Oligonychus pratensis*) was found on young corn in Cimarron County, OKLAHOMA, the last week of May. Heavy infestations were present in Texas County by mid-July on corn and late July on sorghum. Many fields of corn and some fields of sorghum were treated during late July. Rain the last few days of July caused a rapid decline in numbers on sorghum but not on corn. Cool, damp weather during August kept populations in untreated fields from increasing, but heavy infestations continued into early September.

Banks grass mite populations were reported from several High Plains counties in TEXAS on corn during late May. The heaviest infestations were noted in Deaf Smith, Randall, and Castro Counties. Populations apparently were migrating from small grain fields into nearby corn. Localized infestations were also noted on corn and sorghum in other South Plains counties during early June. Populations began to decline throughout most High Plains areas by mid-June. Light infestations were reported from the Trans-Pecos area late in the month. Isolated economic infestations were noted in some panhandle area fields in July. Many Hale County plants were infested with up to 100 per plant. By late July, populations were beginning to increase on grain sorghum and corn throughout the panhandle area. Treatments were applied to some cornfields in Hale and other panhandle counties. Increasing infestations were noted in the San Angelo, Rolling Plains, and High Plains areas by mid-August. Cool weather and increased rainfall during late August held down infestations for the rest of the crop year.

Banks grass mite caused much yellowing of corn in Chaves, Dona Ana, and Luna Counties, NEW MEXICO, by July 26. By August, 20 or more colonies were reported per leaf in Chaves, Eddy, and Roosevelt Counties. Populations increased by mid-August and corn was cut for silage prior to maturity in Roosevelt and Curry Counties due to severe plant damage. In the Pecos Valley, some 4,000 of 7,000 acres were affected. Substantial damage was reported from San Juan County. Banks grass mite infested milo in the Cochise County area of ARIZONA in September, and spot treatments were made. Populations of this spider mite on silage corn in Churchill County, NEVADA, were light as in 1973 due to seed treatments in most fields. In non-seed treated fields, populations increased to economic levels in late July and early August with treatment applied to 184 acres.

Drought conditions in NEBRASKA resulted in greater Tetranychus spp. and Oligonychus pratensis (Banks grass mite) problems in corn in 1974. Treatment was required for O. pratensis in one Dundy County field in late June, with several scattered fields in the county showing light to moderate infestations. Economic infestations, evidently Tetranychus spp., with 2-3 lower leaves killed were also reported from Boone, Frontier, Gosper, Furnas, Red Willow, Rock, Scotts Bluff, Phelps, Cherry, and Antelope Counties in late July and August.

A TWOSPOTTED SPIDER MITE (Tetranychus urticae) buildup was observed on field corn in Hertford County, NORTH CAROLINA, during early July. An appraisal survey revealed a widespread infestation in Chowan, Gates, eastern Northampton, and northern Bertie Counties. Dry, hot weather was conducive to the buildup. At the peak of the population, July 12-19, 35 cornfields (about 1,000 acres) were observed with economic injury in northern Chowan County 30 fields, western Hertford County 3 fields, and in southern Gates County 2 fields. However, populations existed in about 50 percent of the 150 cornfields examined in the area. Populations ranged from light, detectable levels to several thousand per blade. Infested spots ranged from one-eighth acre to 10+ acres.

SMALL GRAINS

Highlights:

PALE WESTERN CUTWORM severely damaged winter wheat in Montana. STALK BORER was taken for first time in South Carolina. HESSIAN FLY was taken further south in South Carolina than previously noted. Wheat infestations by this species in Indiana lightest in 10 years of crop surveying. ENGLISH GRAIN APHID ranged light to heavy in Alabama and maintained continuous populations throughout season. BANKS GRASS MITE seriously damaged crops in Idaho.

Scattered heavy populations of PALE WESTERN CUTWORM (*Agrotis orthogonia*) damaged wheat in Cimarron County, OKLAHOMA, in late March and early and mid-April. This species severely damaged winter wheat in Teton, Pondera, Chouteau, Cascade, Gallatin, and Lincoln Counties, MONTANA, in 1974. About 30,000 acres of wheat were severely damaged. Tree seedlings in a Sanders County nursery were destroyed.

The first reports of FALL ARMYWORM (*Spodoptera frugiperda*) in TEXAS were received during mid-October. Infestations began to appear in small grains throughout the Uvalde area but no damaging populations were reported. During this period infestations increased in Milam, Brazos, and Wharton Counties. Infestations were scattered and light by late October but increasing on small grains in San Angelo area counties. Some treatments were made during the week ending October 25.

STALK BORER (*Papaipema nebris*) was found infesting wheat in Clarendon and Sumter Counties, SOUTH CAROLINA, in May. This was the first record of this species in wheat in the State.

LESSER CORNSTALK BORER (*Elasmopalpus lignosellus*) populations damaged wheat in scattered fields in Greer and Jackson Counties, OKLAHOMA, during October.

Heavy HESSIAN FLY (*Mayetiola destructor*) infestations developed on wheat in Allendale, Bamberg, and Sumter Counties, SOUTH CAROLINA, in April. As far as is known, there are no previous records of this species from so far south in the State. The mild winter, combined with the increase in wheat acreage may be responsible for this extension. Following heavy wheat damage in 1973, race-E of Hessian fly re-occurred in southern ALABAMA. The first reports were made March 15 in Houston County and March 21 in Montgomery County. The developing heavy infestation in Houston County practically destroyed the county wheat crop in May. The average percent wheat infestation by *M. destructor* in INDIANA was the lightest, 0.08 percent, in 10 years of crop surveying. Puparia averaged 0.1 per 100 stems, another record low. The percent infestation was light in resistant and less resistant cultivars. About 68,600 acres of KANSAS wheat had damaging Hessian fly spring infestations. This acreage was concentrated in the north-central, south-central, northwest, and southwest districts. Fall infestations caused no significant damage in wheat.

ENGLISH GRAIN APHID (*Macrosiphum avenae*) and other aphids ranged light to heavy on oats throughout southern and central ALABAMA January 1, 1974, and maintained a continuous population throughout the season. It was the apparent vector of barley yellow dwarf disease which re-occurred in the 30,000-acre crop. Damage was less than in 1973. Wingless *M. avenae* adults were found in rye in Sargent County, NORTH DAKOTA, at the rate of 2 per 100 sweeps May 31. By June 24, populations had increased to 24 per 100 sweeps in Richland, Sargent, and Dickey Counties. By July 19, 90 percent of the wheatfields in Cass, Traill, and Forks, and Richland Counties had up to 300 per 100 sweeps, and 50 percent of the barley fields in these same counties had up to 150 per 100 sweeps. On July 29, late-seeded wheat in Morton, Grant, Hettinger, and Adams Counties had 9 per 100 sweeps. The areas most heavily infested were the east-central, northeast, and north-central districts.

English grain aphid ranged 5-100 per head in small grains and caused damage to Latah, Lewis, Twin Falls, Canyon, Ada, Owyhee, and Fayette Counties, IDAHO, in some fields where the kernels were still in the milk stage of development. Heavy populations of lady beetles, mainly *Hippodamia convergens* (convergent lady beetle), and several species of syrphid fly larvae developed on these heavy aphid populations. Treatment was not recommended after the soft dough stage or if *M. avenae* was less than 25 per head on the grain. Late-planted fields were most seriously damaged. *M. avenae* populations in excess of 100 per sweep developed on small grains in Churchill, Douglas, Humboldt, and Pershing Counties, NEVADA, with the heaviest and most widespread infestations occurring in the latter two counties. Chemical treatments were applied to 4,841 acres with most of the applications occurring in June and July. Spot infestations were reported in Asotin, Spokane, Walla Walla, Whitman, and Kittitas Counties, WASHINGTON, during 1974. Some small grain fields in Whitman County appeared to be at treatment levels, whereas others appeared to have enough predators to carry through without treatment. Several fields were treated in southeast Spokane County.

Colonies of AN APHID (*Rhopalosiphum padi*) were evident on 63 percent of the wheat in Cass, Traill, Grand Forks, and Richland Counties, NORTH DAKOTA, by July 19. Populations of up to 400 per 100 sweeps were present in late-seeded wheat. Barley in these same counties was 21 percent infested with up to 100 aphids per 100 sweeps. The areas most heavily infested were in the east-central, northeast, and north-central districts. Wheat in most areas of OKLAHOMA was infested from early January to mid-May. Heavy *R. padi* populations were reported only from the west-central area in January. Fall activity began in late October with counts up to 50 per linear foot reported from some counties. *R. padi* infestations ranged moderate to heavy throughout the eastern wheat-growing regions of WASHINGTON, usually being associated with *Schizaphis graminum* (greenbug) infestations. Many heavy infestations were reported on Sprague wheat (a new variety) as well as light to heavy populations on other wheat varieties from the Douglas County area. Some treatments were applied.

WESTERN WHEAT APHID (*Brachycolus tritici*) infestations were moderate on wheat in Washita County, OKLAHOMA, in mid-May for a new State record.

BARLEY THRIPS (Limothrips denticornis) adults and immatures were evident at the rate of 2 per stem in rye in Ransom, Stutsman, Logan, and Emmons Counties. NORTH DAKOTA, by June 14. By July 19, adults and immatures were evident in 100 percent of fields surveyed in Cass, Traill, and Grand Forks Counties. Counts ranged up to 60 per plant with heaviest infestations in early seeded barley in Grand Forks and Traill Counties.

The annual WHEAT STEM SAWFLY (Cephus cinctus) survey of hard red spring wheat stubble fields in NORTH DAKOTA for cutting by this pest showed a decrease in cutting in 1974. Cut stems ranged up to 17.6 (average 1.2) percent compared to an average of 1.7 percent in 1973. Cutting was evident in 58 percent of the fields surveyed in 1974 compared to 60 percent of the fields in 1973.

BROWN WHEAT MITE (Petrobia latens) infested wheat in the panhandle counties of OKLAHOMA by mid-March and moderate to heavy populations were found from late March into early May. Most fields were not treated due to extremely dry conditions in the area. Moderate infestations of 50-200 per linear foot were present in the southwest counties during April. Wheat was moderately infested at Elfrida, Cochise County, ARIZONA, in March. Some treatments were necessary. Populations began increasing on small grains in late March in NEVADA. By early April and again in May and June heavy infestations developed in many fields in Pershing County. Irrigation proved ineffective as a control measure and as a result, about 2,100 acres were chemically treated, mostly during May.

BANKS GRASS MITE (Oligonychus pratensis) seriously damaged wheat, wheatgrass, orchard grass, and barley in Clearwater, Blaine, Twin Falls, Franklin, and Nez Perce Counties, IDAHO. Grain fields that were most seriously affected were grain following grain.

Light WINTER GRAIN MITE (Penthaleus major) populations ranged 6-20 per row foot in small grains in Archer, Baylor, and Ford Counties, TEXAS, as early as January 4, 1974. Populations increased slowly throughout most Rolling Plains counties until mid-March. Counts ranged from 148 to 400 per row foot in some Archer County fields. Isolated fields in Lubbock County were heavily infested with 300-400 per linear row foot. Some treatments were applied in isolated fields. Populations declined until the end of May when infestations virtually disappeared from small grains throughout the area. Infestations began to increase on emerging small grains in the Rolling Plains area late in 1974. The heaviest infestations were noted in Haskell and Throckmorton Counties.

WHEAT CURL MITE (Eriophyes tulipae) was apparently heavy in volunteer wheat during the wheat-planting period in the fall of 1973 in KANSAS. A virus, transmitted by this mite, was quite common and often caused heavy losses in the 1973-1974 wheat crop, particularly in many counties in the western halves of the north-central, central, and south-central districts. A limited survey conducted in mid-October 1974 showed some heavy infestations of wheat curl mite in volunteer wheat in Marion, Harvey, Pratt, and Kiowa Counties.

TURF, PASTURES, RANGELAND

Highlights:

Unusual FALL ARMYWORM activity was noted in South Carolina. RANGE CATERPILLAR damage in New Mexico was heavier than expected. The heavy damage expected by a SOD WEBWORM in Maryland never materialized. However, BLUEGRASS BILLBUG is expected to increase in importance to commercial sod production the next few years.

FALL ARMYWORM (*Spodoptera frugiperda*) activity in SOUTH CAROLINA was very unusual. Larvae began appearing earlier than normal which usually indicates significant populations and damage will develop. However, after the early appearance the larvae almost disappeared and very little damage resulted. Infestations in MISSISSIPPI were not as severe as in 1973. Light to moderate damage occurred on coastal Bermuda grass and Johnson grass pastures in all southern counties from late August through September. Infestations were extremely light in ARKANSAS pastureland in 1974, especially when compared to 1973. Infestations were only known to have occurred in Columbia, Lafayette, and Miller Counties. An estimated 10,000 acres were treated. No losses were attributed to decreased production.

RANGE CATERPILLAR (*Hemileuca oliviae*) eggs were light and scattered during mid-February in eastern Colfax and Union Counties, NEW MEXICO. Clusters ranged 1-3 per square yard in late March in Harding County. Scattered egg hatch was first observed around July 1 in western Lincoln County. Three to four second-instar larvae per square yard were observed in late July in southern De Baca and eastern Lincoln Counties. By August 15, infestations of 8-36 larvae per square yard were active in 10,000 acres in northeastern Lincoln County. Due to the excellent condition of the grass at this time, no treatments were applied. Damage was subsequently heavier than originally expected. Fall hatch and associated oviposition included about 150,000 acres of potentially infested rangeland for the 1975 season.

The heavy damage and populations of a SOD WEBWORM (*Crambus trisectus*) predicted for 1974 in MARYLAND never materialized. Populations were greatly reduced in comparison to the 1973 season. The heaviest counts in August and early September ranged 6-10 per square foot in several hundred acres in Montgomery and Prince Georges Counties. Losses in commercial sod acreage were minimal due to better grower awareness and timely spray applications which prevented any significant population increases. Population levels in 1975 are expected to remain spotty but similar to 1974 levels. Parasites such as *Macrocentrus crambivorus* and *Apanteles militaris* (braconid wasps) were very abundant in several areas, and in Montgomery and Howard Counties parasitized 30-40 percent of the webworms by September 20th.

BLUEGRASS BILLBUG (*Sphenophorus parvulus*) over the past 3 years has become more important to MARYLAND bluegrass turf production. During the 1974 season, injury was noticeable in all areas of central Maryland but damage remained subeconomic. Only 400 acres of sod required controls. Damage was first noticed in late June and peaked by mid-July. Although larvae were present in greater populations during this July period, light populations persisted until frost. The heaviest populations averaged 6 per square foot in Montgomery County. This species is expected to become increasingly important to commercial sod production (14,000 acres) over the next few years.

HAIRY CHINCH BUG (*Blissus leucopterus hirtus*) damaged lawns in Washington County, VERMONT, during August. Economic treatments were necessary in several instances. CHINCH BUG (*B. leucopterus leucopterus*) damage was very light in MARYLAND turf and well below normal throughout the 1974 season. Moderate increases are expected for 1975. SOUTHERN CHINCH BUG (*B. insularis*) was active on St. Augustine grass all winter in southern FLORIDA, damage was moderate. This species continued as a pest of turf throughout 1974 and was still feeding the first week in December in Broward County. Then activity began to decline. Infestations were about normal on St. Augustine grass in the Orlando, Orange County, area. *B. insularis* is still the major pest of this grass variety statewide. The fall overwintering survey of *B. leucopterus leucopterus* on bunch grass in ILLINOIS indicated a very light population, as has been the case for several years. The statewide average was 8 per square foot of hibernating material.

MOLE CRICKETS (*Scapteriscus* spp.) were heavy on sod in the Bradenton area of Manatee County, FLORIDA, during spring and fall. Numerous tunnels made it impossible to remove sod where infestations were heavy. Adults heavily infested Pensacola Bahia grass at an Antioch, Hillsborough County, residence during April. A heavy infestation caused economic damage to a Bahia grass pasture near Ocala, Marion County, during the same period. Adults damaged 75 percent of a 300-acre Pensacola Bahia grass pasture at Eustis, Lake County, during May. Damage was noted on 500 acres of Pensacola Bahia grass pasture in Marion County during the first half of August, the first report of the fall brood. CHANGA (*S. vicinus*) adults began appearing at lights in the Gainesville area of Alachua County during the last week of January. The dispersal flight season began sooner than usual due to warm weather. Mole crickets seemed heavier in 1974 than 1973 in the Orlando, Orange County, area which may have been due to more Bahia grass plantings.

GRASSHOPPER populations in KENTUCKY were much lighter in 1974, averaging 150 per 100 sweeps during most of the summer, compared to 400 per 100 sweeps during peak periods in 1973.

Nicoletia meinerti Silvestri, a Silverfish New to the United States (Thysanura)

Michael J. Dunlap and Charles A. Triplehorn [1]

A conspicuous population of Nicoletia meinerti Silvestri has been discovered in the entomology greenhouse on The Ohio State University campus in Columbus. Specimens collected on November 22, 1974, were determined by Pedro Wygodzinsky of the American Museum of Natural History in New York. Dr. Wygodzinsky indicated that this species is found in the tropics and in greenhouses in many parts of the world, but that this is the first report from the United States.

The insect was found in a bench containing pea gravel and planted with ferns. They were especially abundant in decaying newspapers and algae that were being used for culturing isopods on the fern bench. A laboratory culture of these insects has been established by John A. McCabe, Curator of Insect Cultures at Ohio State following the method described by Picchi (1972) who was studying parthenogenic reproduction of this species. The source of the this infestation is unknown.

Reference

Picchi, Veronica D. 1972. Parthenogenic reproduction in the silverfish Nicoletia meinerti (Thysanura). N. Y. Ent. Soc. 80:2-4.

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A Rose Sawfly New To North America (Hymenoptera: Tenthredinidae)

David R. Smith 1/

While studying some unsorted sawflies sent to me by L.L. Pechuman at Cornell University, I discovered an unusual species of *Allantus* which was collected from several localities in Tompkins County, New York. Further study showed that this *Allantus* was not known in North America, and that it is a European species, *Allantus viennensis* (Schrank). It is a striking species, very unlike the other species of *Allantus* found in North America, and I am confident that this discovery represents an introduction.

Allantus viennensis is found in middle and southern Europe, at least as far north as Belgium, Germany, and Austria, south to the Mediterranean, and west to Kirgiz SSR. The larva feeds on the foliage of *Rosa* spp., but it has also been recorded from *Rubus* and *Ribes* (Kartasheva, 1964).

The 8 specimens I examined from New York have the following data: Tompkins County, J. Nowakowski col., 13-VI-67, *Rubus* sp., and 15-VI-67, *Rosa* sp.; Ludlowville, (Tompkins County) 6 June 1968, L.L. Pechuman, and 17 August 1968, Malaise trap, L.L. Pechuman. The specimens collected from Tompkins County were in the vicinity of the Cornell campus and were from the flowers of *Rosa* and *Rubus*. The specimens from Ludlowville were collected in an area where *Rosa* and *Rubus* exist nearby.

The female is 8 to 10 mm in length, mostly shining black with the 3rd and most of the 4th antennal segments reddish brown and the following yellow: 1st and 2nd antennal segments (sometimes partly black); labrum, except for margin; broad transverse band at center of clypeus; narrow line on inner margin of each eye and also sometimes on outer margin; 2 spots on vertex; tegulae; trochanters, extreme apices of femora, tibiae (apices of hind tibiae sometimes dark), tarsi (darker toward apices); spot behind each cenchrus; basal plates; posterior band on abdominal segments 4, 5, 7, 8, and 9, sometimes also on 6, with bands on segments 4, 5, 8, and 9 usually broadest. The forewings are hyaline with an infuscated spot on the anterior-apical part; the veins brownish with costae and stigmata brownish yellow.

The male is similar in appearance to the female except for the following: antennae black, sometimes yellow spot on 1st or 1st and 2nd segments; paraptera sometimes yellow; only abdominal segments 4, 5, and 8 with posterior yellow bands, and sometimes lateral and ventral areas of 3rd segment yellow.

Other *Allantus* species in North America are mostly black or black with white or red markings on the legs and only with, at most, the 5th abdominal segment white. The wings of other species are uniformly hyaline or uniformly lightly infuscated. The coloration of *A. viennensis* is so distinct that the yellow pattern in combination with the infuscated spot on the forewings should distinguish it from all other sawflies on this continent.

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I have not seen the larva, but it was described by Stein (1929) and Lorenz and Kraus (1957). According to Lorenz and Kraus (1957), the head is entirely yellow, without black spots as in some *Allantus* species, the clypeus is pale in coloration, and the 10th abdominal tergum lacks protuberances. *Allantus cinctus* (L.), also a rose-feeding sawfly in North America, has dark spots on the head. The larvae of *Allantus* may be distinguished from other rose-feeding sawflies in this country by the presence of protuberances on annulets 1, 2, and 4 of each abdominal segment. Most other sawfly larvae have protuberances or setae on annulets 2 and 4 only.

Since *viennensis* is apparently established in Tompkins County, New York, it is possible that it may occur in other areas of Eastern States. I would be most interested in receiving any specimens collected from roses or berries that resemble the description given here.

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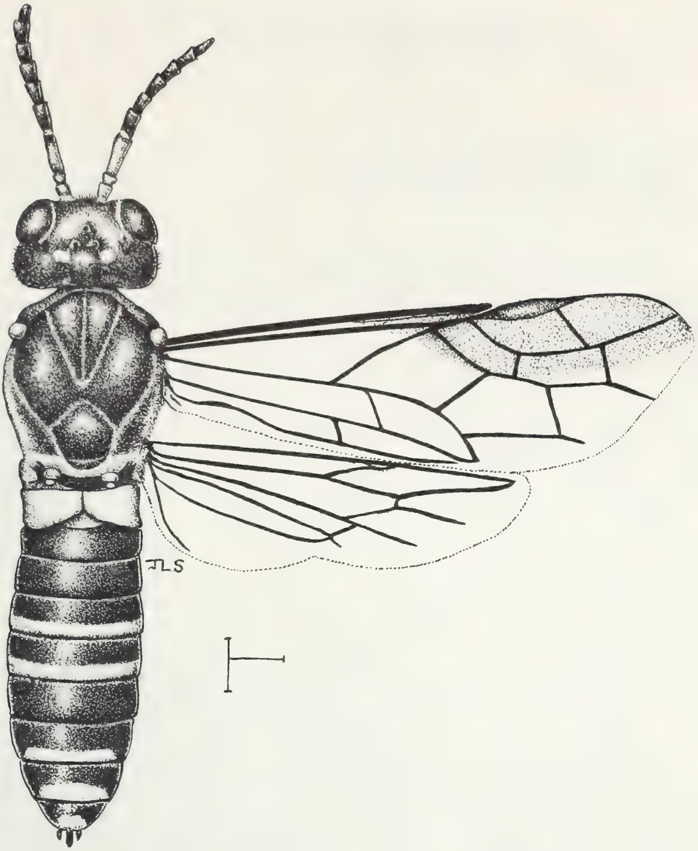

Allantus viennensis (Schrank), dorsal view of female. Drawn from from specimen collected in New York.

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The Identity of Gratiana lutescens (Boh.) and G. pallidula (Boh.) (Cassidinae: Chrysomelidae)

Richard E. White 1/

Breeding experiments with Gratiana lutescens (Boheman) and G. pallidula (Boheman) have been carried out under the direction of M.W. Siebert of the Plant Protection Research Institute in Stellenbosch, South Africa. This work is being done in anticipation of future biological control of Solanum elaeagnifolium (Cav.). Populations of G. lutescens were collected at Tucuman, Argentina, and of G. pallidula near Eagle Pass, Texas. Crosses of these two populations produced fertile offspring, showing that they are properly 1 species, not 2. There is no indication in the literature (nor in the extensive U.S. National Museum collection) that the populations are continuous, therefore they are to be considered as subspecies, with the appropriate names being Gratiana lutescens lutescens (Boh.), and G. lutescens pallidula (Boh.) NEW STATUS. The distribution of the former is Argentina, Brazil, Paraguay, and Chile. The latter occurs from Mexico north into much of the United States. My thanks to M.W. Siebert for allowing me to refer to the results of his studies.

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WEATHER OF THE WEEK ENDING MARCH 3

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HIGHLIGHTS: Precipitation continued to ignore the western Plains and the north-central Plains as either none or bare traces were recorded in those areas. Temperature extremes were confined to small areas this week.

PRECIPITATION: On Monday, a deepening Low center in northern Illinois, spawning gusty winds, dropped heavy snow from southwest Missouri through eastern Iowa, northwest Illinois, and southwest Wisconsin. Rain fell from the same system in Michigan, New York, Pennsylvania, and Ohio. Some of the larger amounts of snow on the ground early Monday morning were: Macon, Missouri, 15 inches, Monette, Missouri, 14 inches, Moline, Illinois, 10 inches, La Crosse, Wisconsin, 12 inches. Many roads were impassable and some drifts were as high as car tops. The storm intensified as it moved slowly northeastward into Michigan late Monday. To the west, a Pacific front moved inland causing rain on the coasts of Washington and Oregon and rain or snow showers in the northern mountains. By Tuesday, the Low had moved from Illinois to southern Canada, north of the Great Lakes. The strong circulation around it continued to cause gusty winds from the northern Plains to the Applachains. Gusts of over 60 m.p.h. were recorded at Chicago, Illinois. Snow was falling throughout the Great Lakes area and as far south as Kentucky. Cooler, dry air flowed southward into the Plains from Canada. Strong winds continued in the Great Lakes area on Wednesday with snow and blowing snow in the northern Lakes area. Fourteen-foot waves pounded the shores of Lake Ontario. Elsewhere, fair weather prevailed from the southern Atlantic coast to the Pacific coast except for clouds shrouding the western coastline and rain along the Washington coast as another Pacific front approached. Before the storm moved out of the area on Thursday, Boonville, New York, was buried in snow squeezed from the moisture laden Lake Ontario winds. By early Thursday, they measured 45 inches on the ground. A High pressure area centered in the Missouri Bootheel brought fair weather to much of the central Plains. The Pacific front moved rapidly to a Low center in western North Dakota and trailed southwestward into central California to a Low center off the west coast. Rain and showers with some snow at higher elevations occurred in the Northwest behind the front. Meanwhile, a weak front in the South from Georgia to Texas caused some rain along and behind it. The Low center with its trailing front moved rapidly eastward on Friday and into Canada before days end. Strong winds and snow accompanied its movement through the Lakes. At midday, the front reached from Michigan to southwest Texas with a warm front eastward from Texas along the gulf coast. Little weather occurred along the front except for some light showers in the Gulf States. Another system moving onto the west coast caused rain on the coast and snow showers in the mountains of the Pacific Northwest. Saturday brought March in rather like a lamb in much of the Nation although gale warnings were posted for the Oregon coast. Scattered showers continued in the Northwest. The front in the Midwest moved to the Appalachains. Rain fell along and behind the front and snow showers were generated south of the Lakes as a pronouced flow moved through the Lakes area to the Appalachains. On Sunday, a Low formed on the front in West Virginia and deepended as it moved through North Carolina and into the Atlantic. Widespread rain fell ahead of the Low and along the front with snow showers behind it in the mountains and south of the Great Lakes as the northerly flow continued. Elsewhere, a Pacific front was active in the Northwest to the north California coast causing rain along the coast and rain or snow showers in the northern mountains.

TEMPERATURE: The week's average temperatures indicated very few drastic departures from normal. Below-normal temperatures for the week occurred from Minnesota southeastward through Mississippi and Alabama and into Florida. The largest departure in this area was in the vicinity of Missouri where the week averaged as much as 7 degrees below normal at Columbia. Some small areas in the mountains of the Pacific Northwest were slightly below normal. The rest of the Nation averaged warmer than expected for this time of year. On Monday, the storm system in Illinois, moving northeastward, brought cold air southward into the Plains and warmer air north along the east coast. At midafternoon the mercury stood at 22 degrees at International Falls, Minnesota, 91 degrees at Fort Lauderdale, Florida, and in the mid-70's in the Middle Eastern States, breaking records there. On Tuesday, the warm air reached even further north when Portland, Maine, set a record high with 50 degrees. The air moving south in the Plains was only a little colder than normal. However, minimum temperatures in southwest Texas and southwest New Mexico dropped to below freezing. The coolest area in the Nation on Wednesday was in the upper Mississippi Valley and western Great Lakes region where afternoon temperatures were in the 20's and upper teens. In contrast, a few places in southern Texas and the Desert Southwest reached the 80-degree mark. On Thursday, more cold air moved southward into the northern Plains, while the previous push moved into northern Texas and New Mexico where it was rapidly warming. Most of the Nation was pleasingly warm for this time of year on Friday. The only very cold area was the upper Mississippi Valley where some readings were 10 degrees or less. The lamb-like day on Saturday, the first of March, brought sunny skies and warm temperatures to many parts of the Nation. It was lionish for others when the cold air moved into Virginia, Maryland, and North Carolina, chilling some of the areas that had been warm most of the week. March continued its contrast on Sunday when the cold air moved into Florida where freeze warnings were posted for the northern portion.

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